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ABSTRACT

This monograph on higher education in the German Federal Republic aims to describe the contemporary scene through a detailed look at structure, finance, research, studies and teaching, students, faculty, and international relations. Organized into nine chapters, the first, "Historical Development and Current Responsibilities," describes medieval and classical traditions, the developments in the Federal Republic, and the current tasks of higher education. Chapter 2, "The Structure of the Higher Education System," looks at institutional types, disciplines, regional institutions, and internal organization. Chapter 3 is titled and discusses "Finance, Planning, and Administration." Chapter 4, "The Role of Research," covers funding and non-university research as well as the importance of research to the university activity. The fifth chapter, "The Organization of Studies and Teaching," focuses primarily on the re-organization that has taken place in the past 25 years. The students--their social profile, life, professional plans, and the job market--are the topic of the sixth chapter. Chapter 7 describes the academic staff and their recruitment. Chapter 8 details the wide variety of international links maintained among institutions, scholars, and students. The final chapter forecasts trends for the future based on current patterns and recent developments. Included are 19 tables, 10 figures, a list of key institutions and 72 references. (JB)

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Higher Education in the Federal Republic of Germany

by
Hansgert Peisert and Gerhild Framhein

Commissioned by the Federal Ministry of Education and Science

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edited by
LELAND C. BARROWS

Translated from the German
by
R. Feemster and G. Framhein

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Preface

CEPES, the European Centre for Higher Education, is pleased to present the fourteenth volume in its monograph series on the higher education systems of the countries of the Europe region. The system described, that of the Federal Republic of Germany, is not only large and complex, but also old, some of the German universities dating back to the Middle Ages. The authors have presented and described this system with exemplary thoroughness and clarity.

Throughout much of their history, German universities and German scholarship have served as models to the world. One immediately thinks of the Humboldtian tradition of the university dedicated to research in all areas of enquiry, viewed not only as a means to expand the frontiers of knowledge but as the most creative form to be given to the teaching/learning process. One is also reminded of the development of the German doctorate as the basic qualification to be met by any aspiring scholar/teacher and the influence of German scholarship in general on post-graduate university education in many parts of the world, particularly in the United States of America. A more recent tradition, peculiar to the post-1949 German Federal Republic, which will no doubt leave its mark, is the creative interplay of forces between the individual states (*Länder*) and the federal authority (*Bund*) with regard to the shared responsibilities for the administration and the financing of higher education.

Even though the authors present the history of German higher education in some detail, their principal objective is to describe the contemporary scene. Individual chapters are devoted to the structure of the system and the different types of institutions; their financing, planning, and administration; the role and the funding of research; the recruitment of students and of teaching staff; and other relevant aspects of the total subject.

The text is re-enforced and the main points illustrated with no less than nineteen tables and ten figures, the latter including the reproduction of two cartoons, dated 1969 and 1972 respectively, which amply sum up the national debate, which was taking place in Germany during these years, on the restructuring of higher education.

CEPES is particularly pleased to thank the authors, Hansgert Peisert and Gerhild Framhein, both of the University of Constance, for their excellent work. It also wishes to express its gratitude to the Federal Ministry of Education and Science of the Federal Republic of Germany for having undertaken to identify and to commission the authors and for having agreed to print the completed manuscript in Germany, assuming the costs of the publication and the distribution of the monograph.

Scholars and laymen alike will read this study with profit.

Carin Berg,
Director of CEPES

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Foreword

This contribution to the series "Monographs on Higher Education", published by CEPES, the Unesco European Centre for Higher Education, is intended to provide an overview of the structures and development of higher education in the Federal Republic of Germany. Our objective was to find a problem-oriented presentation in which the dynamics and peculiarities of this higher education system could be viewed in contrast to those of the higher education systems of the other European countries. In this work we could draw upon our report on German higher education for the twelve-country study "Systems of Higher Education" that was produced by the International Council for Educational Development (ICED, New York) in the late 1970's (Peisert/Framhein 1978; 1980).

We are gratified that our contribution is appearing at a time when there are many indications that the doors of the "common European house" are opening wide and that the encounters between European countries will become closer. In this respect, the exchange of students and scholars plays an important role which can be effectively supported by information about the national higher education systems. We wish to thank the Federal Ministry of Education and Science for having commissioned this work and for having supported us with sound advice.

When scholars who have been commissioned by a ministry write such a work, their efforts represent a dialogue between higher education and the State, between scholarship and administration, between research and practice. Within the state administration of science, few persons have carried on this dialogue as actively and as openly as Dr. Eberhard Böning (1929-1988). For thirty years, he helped to shape the higher education developments described here from a variety of significant positions, most recently as State Secretary of the Federal Ministry of Education and Science. From his experience in higher education policy-making and administration, he stimulated us in many ways to pursue our research into higher education, and it was always a pleasure to reflect upon our results with him. We dedicate this volume to his memory.

University of Constance, May 1989

Hansgert Peisert
Gerhild Framhein

1. Historical Development and Current Responsibilities

Since the founding of the Federal Republic of Germany in 1949, the system of higher education has undergone an unusual expansion. This trend is especially clear when one considers enrollments. The number of students has increased tenfold in the last 40 years, reaching a peak at almost 1.5 million in 1988. This unprecedented expansion was supported at the political level. It reflects the increasing importance of science and technology, the expansion of specialized knowledge, the social demand for highly qualified labor as well as the fact, observed in most European countries, that increasingly large segments of the population are seeking an academic preparation for professional life. This expansion of higher education was buttressed by demographic trends as the children of the babyboom years reached college age. The currently observed downswing in the college-age population will, in all probability, bring the forty-year period of rising enrollments to an end.

The pressure of these developments has brought about profound changes in the structure and design of higher education in the Federal Republic of Germany. Initially, the institutional system was made up of largely homogeneous universities and technical universities that co-existed side by side. This relatively uniform system has been gradually replaced by a more varied and differentiated one. During the last twenty years, the number of universities and technical universities has doubled as new institutions were established. Their traditional division of labor has become blurred. They have since merged into one sort of institution into which the training of teachers, originally the responsibility of specialized teacher training colleges, has been integrated to a large extent.

The system of higher education was radically expanded around 1970 by the addition of a new type of institution known as the *Fachhochschule*. It grew out of the vocational-training institutions, the legal status and training regimen of which were expanded in such a way that they could be merged with the universities into one system of higher education.

In 1988, the system of higher education in the Federal Republic included around 240 institutions grouped into seven types according to their differentiated tasks in education and research. The various institutions of the same type are, at the same time, quite heterogeneous with respect to size, range of disciplines, and research specialties. Most students attend either universities/technical universities (68 percent) or *Fachhochschulen* (21 percent).

1.1 Medieval and Classical University Traditions

Two historical periods have left lasting marks on the German tradition of higher education: the medieval period during which the first European universities were founded and the early nineteenth century neo-humanist renewal and reform of the university in Prussia.

- Medieval Origins

The historical roots of the German institutions of higher education can be traced back to the common European tradition of the medieval university that originated in Bologna and in Paris during the twelfth century. These *universitates magistrorum et scholarium*, communities of teachers and students, possessed papal and imperial privileges. They had the right to administer their internal affairs largely independently and to hold examinations and to award academic degrees recognized beyond the boundaries of their own regions. The universities did not offer specialized courses of study; rather, they offered an education that covered the entire body of knowledge available at that time. They were divided into a lower, introductory-level liberal arts faculty (*artes liberales*) and the higher faculties of law, medicine, and theology. Institutional features of the medieval university, such as its division into faculties with elected deans and a rector as the institutional head, have prevailed in higher education to this day.

Additional universities were soon founded in Italy, France, England, and Spain, all structured according to the pattern of these two original universities. Germany followed with some delay. The first universities within the German-dominated Holy Roman Empire of that time were Prague (1348) and Vienna (1365). By the end of the fifteenth century, the universities in Heidelberg (1385), Cologne (1388), Erfurt (1392), Würzburg (1402), Leipzig (1409), Rostock (1419), Trier (1454), Greifswald (1456), Freiburg (1457), Ingolstadt (1472), Mainz (1476), Tübingen (1477), Wittenberg (1502), and Frankfurt/Oder (1506) had also come into existence.

The formation of small states as well as the religious opposition between Protestants and Roman Catholics furthered the establishment of numerous new universities within German-speaking areas during the following centuries. As a rule, they were state institutions, a characteristic feature of German institutions of higher education which would last. Their primary task was to educate servants of the Church and the State. Around 1700, some forty universities existed in the German states; many of these, however, have subsequently either been dismantled or transferred to other locations. The three oldest continuously existing universities within the boundaries of the Federal Republic of Germany are Heidelberg, Freiburg, and Tübingen.

It is important to realize that the universities of that time were small units with fluctuating enrollments of a few hundred, sometimes under one hundred. By 1500, there were altogether approximately 3,000 students at German universities. At the beginning of the eighteenth century, there were about 8,000, but by the Napoleonic Age, one hundred years later, the enrollment had dropped to around 5,000 (the figures are taken from Prahl 1978, p. 369 ff.).

The universities, linked as they were to the small state system of Germany, had, by the eighteenth century, entered into a profound financial and academic crisis. By and large, university education continued to focus on the repetition of a received and rigidly formulated curriculum. In contrast, there were some new universities that advocated a more enlightened concept of knowledge, that made room in their curricula for the experimental sciences and replaced the traditional instruction in Latin with lectures in German. Halle (1694), Göttingen (1737), and Erlangen (1783) were founded as "modern" eighteenth-century universities. These institutions paved the way for the renewal of German university education and the period of neo-humanist university reforms.

- Neo-Humanist University Reforms

The neo-humanist university reforms, landmarked by the founding of the University of Berlin (1809/1810), constitute the second period which left a lasting mark on the German university and shaped its classical tradition. The neo-humanist concept of education as individual personality development, the notion of self-induced learning, and the "idea of the university" drawn from German idealism (Kant, Fichte, Hegel, and Schelling), have retained a lasting fascination up to the present.

The university reforms of the early nineteenth century are inseparably bound up with the name of Wilhelm von Humboldt, who brought the new university in Berlin into existence during a brief sixteen-month tenure as section chief for culture and instruction in the Prussian Ministry of Interior Affairs. The University of Berlin eventually emerged as the model for German universities in general.

The essential principles of Humboldt's university concept were as follows: extensive internal autonomy of the state university; its self-administration by the *Ordinarien* (chaired professors); the emphasis on research, free of all immediate social interests; the distinction between university education and school-type instruction, on the one hand, and professional practice, on the other.

Corresponding to this concept were the principles of "freedom of teaching and learning" for professors and students and the "unity of research and teaching". The purpose of university-level teaching was not to transfer knowledge by rote learning but to acquaint students with research and to allow them to participate in it. This principle, expressed in the formula, "education through scholarship", became an important didactic tool. This principle was meant, not only to guarantee the best academic training, but also to educate students to think independently, and to develop those general qualities considered important for a university-educated person's position in professional life and in society.

Humboldt's programmatic, oft-quoted proviso, to consider scholarship as something as yet unfound, that will never be located entirely, but must be incessantly sought after, emphasizes the central, dynamic role accorded to research in this new concept of the university. This special emphasis on research set the course for future developments in the German universities and affected higher education in other countries as well. The development of the American higher education system in the second half of the nineteenth century, especially the establishment of graduate schools, can be traced directly to the research-oriented model of the German universities.

The renewal of the university was intended to prevent the disintegration of scholarship into separate institutions and to unify it organically in a *universitas litterarum*. Organizationally, Humboldt's design for the university was oriented towards the traditional model of four faculties. However, the old faculty of arts (*artes liberales*), the propaedeutic responsibilities of which were re-assigned to the *Gymnasium*, was accorded a totally new status as the "Philosophical Faculty". In the view of education held by the reformers, philosophy was considered the "queen" of the sciences and was cast in a leading role, to which scientific progress in the various disciplines was to make reference. At the same time, the philosophical faculty became the umbrella organization for the gradually departmentalizing humanities and natural sciences. It also served to train teachers for the *Gymnasien*, the secondary schools in which the so-called "maturity", the admission requirement for the university, was earned.

The general structure of the faculties underwent only gradual modifications over the course of time: faculties of economics developed from faculties of law at many universities, and the philosophical faculties spawned those of the natural sciences. By and large, these basic structures endured until higher education was reorganized in the Federal Republic during the 1970's.

- The Emergence of Technical Universities

The applied technical sciences had no place in this *universitas litterarum*. Since the eighteenth century, they had developed at independent schools and polytechnics that received the higher status of technical university in rapid succession during the second half of the nineteenth century: Karlsruhe (1865), Munich (1868), Aachen (1870), Braunschweig (1872), Stuttgart (1876), Darmstadt (1877), Berlin (1879), Hannover (1880), Dresden (1890), Danzig (1904), and Breslau (1910).

The new technical universities had to struggle against the entrenched monopoly of the universities in order to attain equivalent academic status (for example, the right to grant the doctoral degree). Later, the teacher-training institutions for the lower and middle schools encountered the same resistance during the Weimar era and the early years of the Federal Republic as they evolved into teacher training academies and later into teacher training colleges with authority to confer the doctorate. The most recent extension of the higher education system in the Federal Republic was accompanied, once again, by the characteristic frictions between the established institutions and the *Fachhochschulen* as "newcomers" in the system.

- Quantitative Developments (1810-1945)

The renewal of the university system beginning in 1810 helped the individual universities recover much of their lost attractiveness. Enrollments once again increased. After reaching a shortlived highpoint of some 15,000 students around 1830, the number of students stagnated at about 12,000 during the next decades. Not until the German Empire was founded in 1871 did a new period of growth begin. At the turn of the century, there were already about 50,000 students (approximately 13,000 of them at technical universities). In 1910, there were 68,000 students. After the First World War, during the years of the Weimar Republic (1918-1933), the total enrollment fluctuated between 100,000 and 130,000.

The National Socialist period (1933-1945) was an era of moral, academic, and quantitative decline in German higher education. Like most other institutions, the universities were subject to rigid totalitarian control. Racist policies forced many professors to emigrate. The generally anti-intellectual attitude of the Third Reich resulted in a substantial reduction in the numbers of faculty members and students at the universities. The enrollment of women, in particular, was barely tolerated during this period. In 1938, shortly before the outbreak of the Second World War, the number of students had dropped by more than half in only five years (1933: 121,000; 1938: 56,000).

1.2 The Development of Higher Education in the Federal Republic

- Decentralized Reconstruction

The federal system of government adopted by the Federal Republic of Germany at its inception in 1949 marked a return to the traditions of the Weimar constitution and as such was a conscious reaction to the degradation of the centralized State by the National Socialists between 1933 and 1945. Thus, the federal principle was imbued with a particular "moral" quality, an important factor in the evolving national consciousness of the new republic. "Cultural autonomy", the idea that the *Länder* (i.e. the federal states) enjoyed complete authority in the domains of education and culture, became a prominent focus of federalism.

In line with this principle of cultural federalism, the system of higher education in the Federal Republic of Germany developed for a long time without any interference by the *Bund* (the federal government). Thus, rebuilding higher education was primarily the responsibility of the ministries of culture in the eleven *Länder*. Private institutions have never played a significant role in German higher education. To the extent that systemwide harmonization was necessary, it was accomplished at *Länder* level, by the Permanent Conference of the Ministers of Culture of the States of the Federal Republic of Germany (*Ständige Konferenz der Kultusminister der Länder in der Bundesrepublik Deutschland* - KMK). At the institutional level, systemwide issues were addressed by the West German Rectors Conference (*Westdeutsche Rektorenkonferenz* - WRK), in which the heads of universities and comparable institutions collaborate on a permanent basis.

The reconstruction of higher education picked up the meager remains of the German university system of the Weimar era. Of the 24 universities and 14 technical universities in

Germany in 1937, 16 universities and 9 technical universities were located within that part of the country which was to become the Federal Republic. Six universities and three technical universities were located within the region destined to become the German Democratic Republic. One university and two technical universities were located within the present boundaries of Poland, and one formerly German university is now located in the Soviet Union.

The reconstruction of the university system was undertaken with the confident notion that "at its core, the German university system is sound", a phrase coined by the Prussian Minister of Education, Karl-Heinrich Becker, at the end of the First World War. In the same way, the reconstruction of universities in the Federal Republic after the Second World War returned to the Humboldtian traditions and the Weimar model.

The autonomy of universities was restored; their self-administration by *Ordinarien* (chaired professors) was strengthened; and the largely unstructured process of teaching and research was resumed. This system was based on the assumption that the secondary school education which students had received, at the *Gymnasien*, was sufficient to enable them to acquire in a university, largely on their own, the qualifications necessary to complete their studies.

The classical university was structured so as to provide an academic education to a small elite, a situation which changed fundamentally with the increasing demand for higher education. The pressure thus put on the system would inevitably induce changes in the organization of studies, in the administration, and in the status of higher education. This reality was captured by the pointed observation of the American university president and higher education politician, James B. Conant, who remarked in 1964 that "the German university system is the best in the world - for the nineteenth century" (see Fallon 1980, p. 3).

- Quantitative Development (1950-1988)

In the mid-1950's, a first wave of rising enrollments began. Even so, the Federal Republic proved to be a "latecomer" when compared to other nations in this respect. In the context of the rising demand of the expanding industrialized countries for highly qualified labor, predicted in the discussions held by the OECD on the economics of education, this situation was taken as a warning sign. A sensational series of articles, *The German Educational Catastrophe* (Picht 1964), which predicted grave deficits for the German economy and its international competitiveness, captured the attention of the public: "An educational emergency is an economic emergency. Our recent economic upswing will come to a rapid halt if we lack the new generation of qualified workers without whom no system of production can achieve anything in a technological age" (Picht 1964, p. 17).

This call to broaden higher education to meet economic needs was supplemented by the equally prominent publication, *Education is a Civil Right* (Dahrendorf 1965). The latter pleaded for an active policy aimed at abolishing the social and regional inequalities in the education system. Although their motives were different, both approaches made the same demand and led to a public consensus on the necessity of increasing the interest in education on the part of broad spectra of the population and of attempting to expand the tertiary level. Putting this educational policy into effect became all the easier in that it matched a latent interest in education in many segments of the population.

This development is illustrated by the expanding percentage of the population that entered institutions of higher education. In 1950, approximately four percent of the college-age population enrolled in an institution of higher education. In 1960, the figure was eight percent. In 1970, fifteen percent of the population entered the system which had been expanded to include the *Fachhochschulen*. Since 1980, about twenty percent of the college-age population has entered higher education. Thus the system has been expanded from an elitist university system to a relatively open system of higher education. The absolute number of students increased more dramatically than the percentages above suggest. Spurred on by the rising birth rates of the 1950's and 1960's and the increasing length of time it typically takes students to complete their education, there has been an unusally high increase in total enrollments with yearly increases between 20,000 and 90,000 students (see Figure 4 in Chapter 3).

- Co-operative Federalism of *Bund* and *Länder*

The increasing demand for higher education made shortages of personnel, space, and financing for research and instruction all the more obvious. More and more it was deemed necessary to base the further development of higher education and science, domains notoriously hostile to planning, on accurate statistical information, and medium-term forecasts and planning concepts, as well as to introduce systemwide co-ordination committees. In this process, the *Bund* became involved, step by step, in funding and in policy-making for higher education and research, thus eroding the firm principle of cultural federalism, not always without controversy.

An important factor in the expanding role of the *Bund* was that of the federal budget surplus obtained during the 1950's at a time when the growing needs of the academic sector had begun to exceed the financial means of the *Länder*.

As early as 1956, the Federal Government had participated in the financing of research, the construction of buildings for higher education institutions, and in the loan and grant programmes for students, thus easing the financial burden placed on the *Länder* in the domain of higher education and research. This "unofficial" practice was given a contractual basis in a 1964 administrative agreement linking the Federal Government and the *Länder*.

An important step on the road to increased co-operation between *Bund* and *Länder* was the formation of the Science Council (*Wissenschaftsrat*) in 1957. The Science Council represented the first central agency in which the *Bund* and the *Länder* worked together as such; at the same time, the co-operation between the State and the scientific community was institutionalized. This consulting body, as it was only empowered to make recommendations, not binding resolutions, has had a decisive influence, over the last thirty years, on the expansion and structural development of higher education.

The trend to strengthen the federal authority in educational matters was supported, to a significant degree, by the social and political maxim, laid down in the Basic Law, that uniform living conditions in all regions of the Federal Republic should be maintained. This point of view implies a centralist perspective. In contrast, the perspective of cultural federalism tries to preserve diversity. In the wake of comprehensive federal financial reforms, the proposal was made to involve the Federal Government in those responsibilities of the *Länder* which are important for the general public and in which the co-operation of the *Bund* was necessary to bring about uniform living conditions throughout the republic. These were called "joint tasks" (*Gemeinschaftsaufgaben*).

In order to implement this proposal, the Basic Law (*Grundgesetz* - GG) of the Federal Republic was amended in 1969 by the introduction of joint tasks to be undertaken by the *Bund* and the *Länder*. Along with the improvement of regional economic and agricultural structures and the protection of the coastline, the joint tasks particularly concern education and science as follows:

- the expansion and the construction of higher education institutions, to be provided for by legally regulated joint-framework planning (see Art. 91a GG);
- the possibility of co-operation, by way of agreements, in educational planning and the promotion of institutions and projects of scientific research of national importance (see Art. 91b GG).

Simultaneously, the *Bund* was authorized, within the framework of concurrent legislation,

- to issue "framework regulations" with regard to general principles of the system of higher education (see Art. 75, la GG).

In order to deal with the new responsibilities given to the Federal Government in 1969, the Federal Ministry of Scientific Research (BMWF) was expanded and became the Federal Ministry of Education and Science (BMBW), from which the Federal Ministry of Research and Technology (BMFT) was separated in 1972.

With the amendment of the Basic Law in 1969, a basis was created for federal participation in educational planning. It also led to the sharing of responsibilities, particularly in the area of investments in construction, which so far had been limited to co-operation with regard to the recommendations for planning issued by the Science Council. Officially, this constitutional amendment marked a turning-away from the principle of genuine cultural federalism. The term coined for the new form of co-operation between the *Bund* and the *Länder* which resulted was "co-operative cultural federalism".

- Dynamics of Reform and Legislation

At the end of the 1960's, at the time of this constitutional amendment, the quantitative increase within the educational system had led to a genuine debate on reform. The outstanding public importance accorded to the education sector during these years can be understood from the policy statement made by the Chancellor in his declaration of 1969: "Education and training, science and research are top priorities in the reforms we must effect".

Of course, discussions about reforms had accompanied the reconstruction of higher education in the Federal Republic from the outset; however, these discussions, which had been conducted primarily within academic circles, were characterized by a somewhat leisurely pace and respect for tradition. Now the set-up of higher education and science became a matter of public dispute and alternative, "system-altering" reform concepts were suggested. The issues included the organization of higher education and institutional governance (e.g., the breakdown of overly large faculties into smaller units); the dismantling of the *"Ordinarienuniversität"*, the exclusive position of chaired professors, in favor of voting rights for the sub-professorial staff and students; and the organization and content of university education (e.g., short- and long-term study programmes, standardized periods of study, project studies, research- and practice-orientation, and the social relevance of studies). The entire structure of tertiary level education (admissions, transfer, and mobility between different types of institutions) was supposed to be revised and integrated into a comprehensive higher education system. The relationship between the State and higher education was at issue, such problems as the criteria for admissions restrictions at the overcrowded universities needing to be developed.

The wide range of topics was matched by the number and variety of participants: governments and parliaments of the *Bund* and of the *Länder*; the political parties; the scientific organizations, associations, and unions; and, not the least, the members of the higher education institutions including their various interest groups. Accordingly, the concepts and proposals were multi-faceted and controversial; often their only common denominator was the demand for change.

The fundamental, sometimes chaotic debate during which the old *alma mater* threatened to fall apart completely, has been aptly captured in caricatures, especially the longing for a new Humboldt who might, once again, accomplish an entire work of reform in 16 months (see Figure 1).

In connection with the concurrent student movement which began in 1968, the reform process occasionally took on revolutionary characteristics. Embedded in a worldwide student protest movement, the criticisms made by students were specifically directed at the German university scene, not the least at its inadequate discussion and treatment of the National Socialist period. It gave rise to demands for a comprehensive "democratization" of higher education and society in general. The militant escalation of the student protests, which at times pushed the universities to the brink of collapse, had a damaging long-term effect on the public concern for the problems of higher education and students.

At the opposite pole of the student movement was the nascent parliamentary process that created a legal framework for higher education. Well into the 1960's, higher education in the eleven *Länder* had been regulated by statutes rather than by comprehensive legislation. The constitutional amendment of 1969, which authorized the *Bund* to pass framework regulations, had been intended to maintain uniformity within the dynamically developing domain of higher education without limiting the responsibility of the *Länder* by overly narrow regulations.

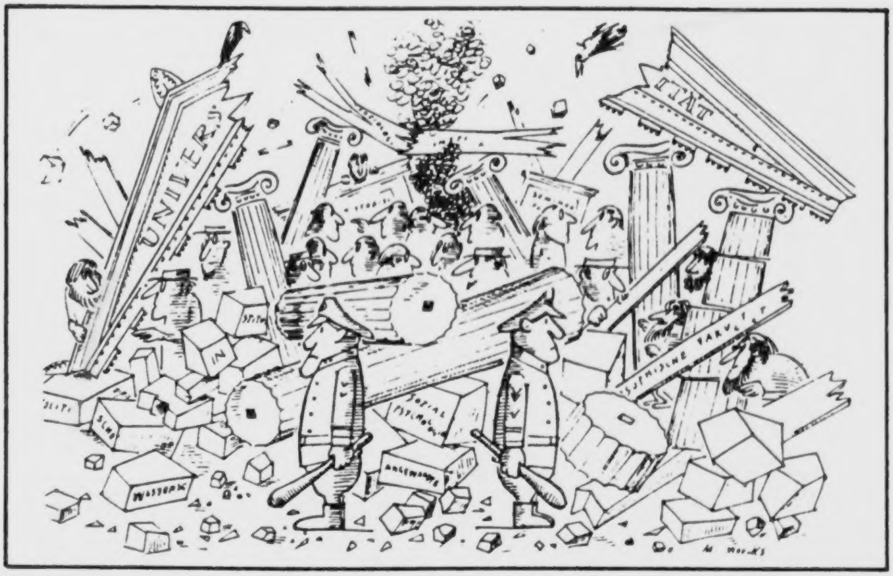
The Framework Act for Higher Education that took effect in 1976, after years of parliamentary negotiations, created a uniform legal framework for the higher education system, for the first time, throughout the Federal Republic. The laws of the eleven *Länder* were to be adapted to it within three years. The framework provisions refer to the organization and the governance of higher education, to admissions and curricular reform, to personnel structures, and to the participation of all members of the institutions of higher education in the governing bodies of their institutions. In 1985, the Higher Education Framework Act underwent a major revision that was once again to be followed by an adaptation of the laws of the different *Länder*.

- The 1977 Resolution to Open Higher Education and the "Overburdening" of the 1980's

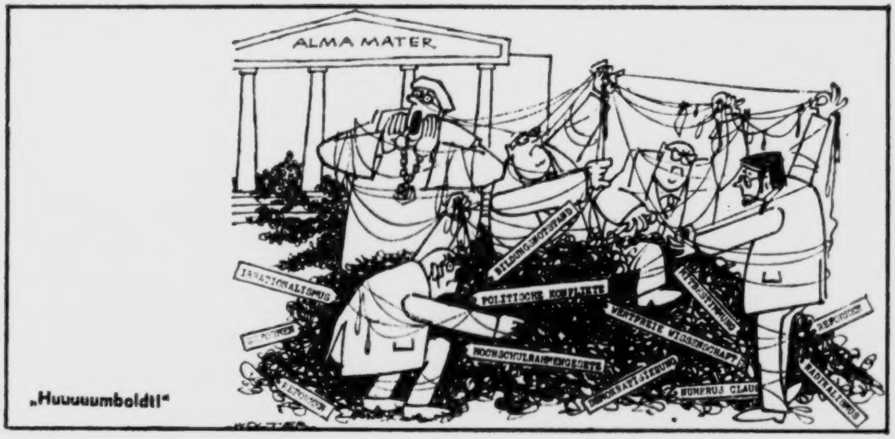
The passage of the Higher Education Framework Act in 1976, in a sense, brought an end to the active phase of public discussion of reform. Wide-ranging reform proposals were partially retracted in its wake (for instance, the global transformation of the tertiary level into a system of comprehensive universities). At the same time, while enrollments were continuously rising, the period of forced expansion of higher education infrastructures came to an end during the mid-1970's because of the deteriorating situation of the state budgets.

In a 1977 political initiative, which was also supported by higher education, the heads of government of the *Bund* and the *Länder* resolved to keep admission to higher education generally open, despite the insufficient personnel and space capacities. In view of the numerous age-groups about to reach college age, the resulting overcrowding was consciously accepted, while, at the same time, special programmes were envisaged to alleviate it. Ten years after this initiative, the institutions of higher education concluded that because they were forced to cope with this overcrowding essentially with their existing resources, the con-

Figure 1
Cartoons on Higher Education Reform


UNIVERS
ITÄT
M. Marcks

Marie Marcks: Deliberations on Higher Education Reform, 1969


ALMA MATER
IRRATIONALISMUS
BILDUNGSNOTSTAND
POLITISCHE KONFLIKTE
MITBESTIMMUNG
WERTFREIE WISSENSCHAFT
REFORMEN
REFORMEN
HOCHSCHULRAHMENGESETZ
DEMOKRATISIERUNG
NUMERUS CLAU
REFORMEN
RADIKALISMUS
„Huuuuumboldt!“
WOLTER

Wolter: "Huuuuumboldt !"; Spiegel, 1972

sequences for the development of research and of teaching had been unhappy (see WRK 1988). A central issue of the debates over higher education in the end-1980's was, as a consequence, the dispute over financial resources and staff provision pitting the overburdened institutions against the state ministries responsible for funding them.

1.3 The Tasks of Higher Education

The two classical functions of German universities continue to play a central role in the functions accorded to higher education in the Federal Republic: research, on the one hand, and teaching and studies, on the other. The Higher Education Framework Act (*Hochschulrahmengesetz* - HRG) has re-emphasized these functions, supplementing them with reference to an explicit connection between academic training and professional practice.

Functions of the Institutions of Higher Education:

According to their specific functions, the institutions of higher education shall contribute to the fostering and development of the sciences and arts through research, teaching, and studies. They shall prepare students for occupations which require the application of scientific findings and scientific methods or creative ability in the artistic fields (HRG, § 2.1).

Purpose of Research:

Research at higher education institutions shall serve the purpose of gaining scientific knowledge and of laying the scientific foundations for furthering the advancement of teaching and studies. Research at institutions of higher education may, according to the function of the institution concerned, cover any scientific field as well as the practical application of scientific findings, including the impact which such application of scientific findings may have (HRG, § 22).

Purpose of Study:

Teaching and study are to prepare students for a profession in a certain field of activity, imparting to them the particular knowledge, skills and methods required in a way appropriate to each course so as to enable them to perform scientific or artistic work and to act responsibly in a free, democratic, and social state governed by the rule of law (HRG, § 7).

Within this legal framework, the ideal of the unity of research and teaching is no longer maintained in the strict classical sense. The relationship between research, on one hand, and teaching and studies, on the other, remains open, differentiated ways of combining them being acknowledged.

The enthusiasm with which "education through scholarship" was emphasized, even in post-war times, as the real aim of higher education, has yielded to a certain sobriety. The idea that higher education serves primarily to prepare students for professional life is no longer shamefully denied, even if it is still expected to significantly influence general personal development, especially rational and critical abilities as well as the capacity for responsible action. While such personal educational goals are pursued in the USA, for instance, by means of a broad liberal arts education, German higher education has maintained its confidence in its particular view that the pursuit of specialized knowledge exerts at the same time a general formative influence upon students. The emphasis in the legal regulations on practice-orientation, however, stresses that research, teaching, and studies are not to be pursued in the academic ivory tower but are rather to be aimed at professional and societal requirements.

Among the traditional tasks of the universities is the training of succeeding generations of scholars and scientists; whereas continuing education, likewise anchored in the Higher Education Framework Act, has no traditional role in the German system of higher education. The significance of continuing education and the importance of the concept of "life-long learning" in an age of rapid scientific and technological development, is widely accepted. Yet, the development of the forms and the programmes of continuing education for working people within institutions of higher education is still in its infancy.

Continuing education can be understood as one component of a many-sided medical, scientific, technical, and cultural service that institutions of higher education provide, as a matter of course, in conjunction with their primary tasks. These service functions are not, as they have been in many other countries, part of the traditional concept of German higher education, and they are not mentioned in the Higher Education Framework Act. It is indisputably the case, however, that the institutions of higher education, the regional networks of which have become increasingly dense during the past twenty years, have developed into service centers, the particular "know how" of which (for example with regard to "technology transfer" or "science transfer" between higher education and business) and the cultural facilities (e.g. libraries and lectures) of which, are sought after and used in the surrounding regions.

That this is so was suitably pointed out by the West German Rectors Conference which also claimed that these service functions should be more consciously and systematically pursued by the institutions. Thus the service function could take its place next to research, the training of new generations of scholars, and teaching, as the "fourth pillar" of higher education (WRK 1988b, p. 60).

2. The Structure of the Higher Education System

2.1 Institutional Types and Access

The universities and the technical universities (now simply referred to as "universities") form the traditional core of the higher education system and, even today, represent the largest sector in that system. The numerically less significant theological seminaries and the art academies have also always been counted as institutions of higher education.

This system of higher education has been gradually extended. First the teacher training colleges were included in the system of higher education. For most of these, this was but an intermediate station on their way into the university system. Around 1970, two new institutional types, the *Fachhochschule* and, in two *Länder*, the *Gesamthochschule* (comprehensive university) were introduced. Since 1973, the special type of *Fachhochschule* known as *Fachhochschule for Public Administration* has been added. Thus the higher education system is now composed of seven types of institutions with different responsibilities and widely varying degrees of quantitative importance:i) universities; ii) *Gesamthochschulen*; iii) theological seminaries; iv) teacher training colleges; v) art academies; vi) *Fachhochschulen* and vii) *Fachhochschulen* for Public Administration.

- Access

Higher education builds upon the primary and secondary-school education, received by its students; however, different admissions requirements apply to the various types of institutions (see Figure 2). Studies at universities, theological seminaries, and teacher training colleges, as well as university-type courses at *Gesamthochschulen* and, as a rule, at the art academies, require the *Abitur* or "maturity certificate" (the general or the subject-restricted higher education entrance qualification). Studies at *Fachhochschulen* and the corresponding courses at *Gesamthochschulen* require the *Fachhochschulreife*, the entrance qualification for studies at *Fachhochschulen*.

The *Abitur* is the secondary school leaving certificate, which is usually earned at a *Gymnasium* after thirteen years of schooling. Alongside the general, there is also the subject-restricted higher education entrance qualification which is completed at specialized *Gymnasien* (e.g. in economics, and in technical fields) and only qualifies the student to pursue particular subjects. It is also possible for adults with occupational experience to complete the *Abitur* at evening *Gymnasien* and *Kollegs*, on the so-called "second educational track" (*zweiter Bildungsweg*).

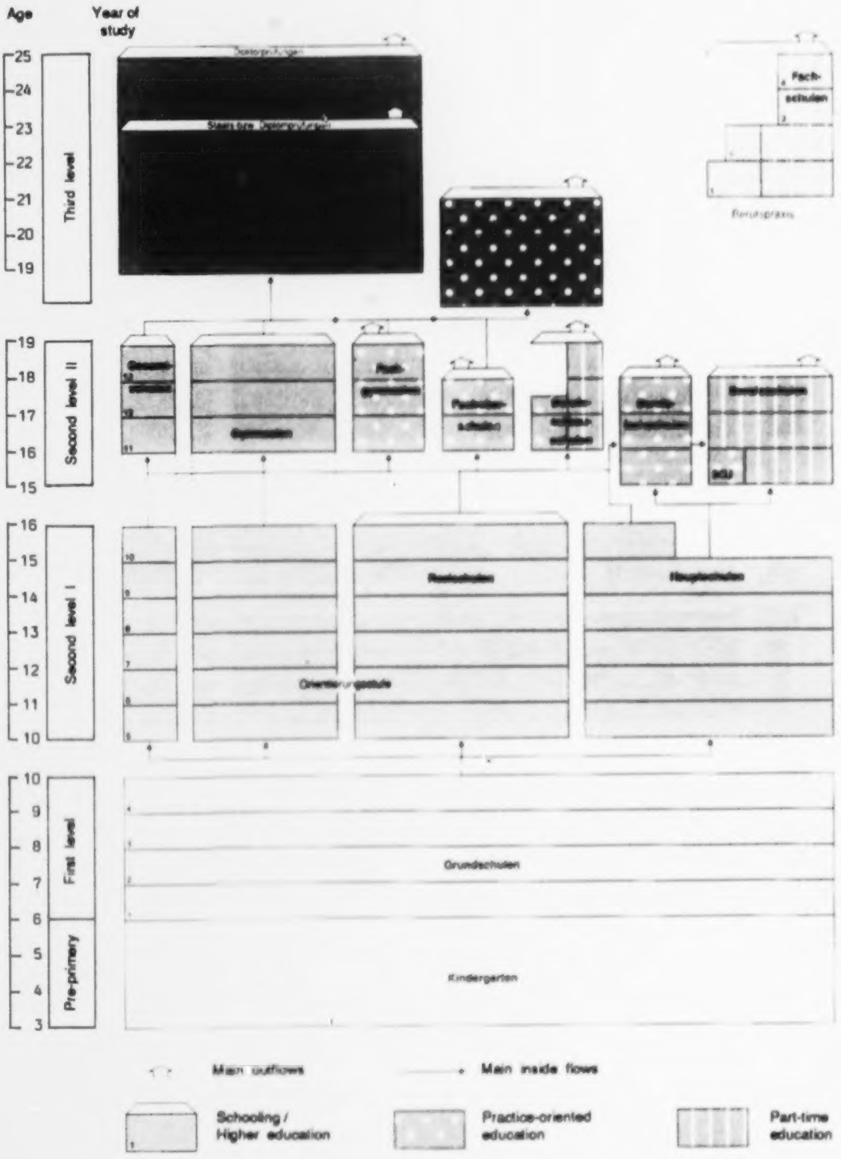
The general higher education entrance qualification is, as a rule, valid for admission to any course of study at any institution of higher education (it includes the entrance qualification for studies at the *Fachhochschule*). This rule has been subject to certain limitations, as the result of rising enrollments. For some fields in which the number of applicants significantly exceeds the available enrollment capacity, admissions restrictions (numerus clausus) have been introduced. These are regulated by centralized procedures (see Chapter 3.4).

In addition to the *Abitur*, applicants to art academies must give proof of special artistic talent (admissions test). For admission to *Fachhochschulen*, a vocational internship is required in addition to the *Abitur*.

The entrance qualification for studies at *Fachhochschulen* is usually acquired after 12 school years at the *Fachoberschule*, a vocational secondary school (classes 11 and 12). The eleventh class is dedicated primarily to practical vocational training. It can be replaced by a completed vocational training programme such as an apprenticeship. After completing voca-

Figure 2

The Educational System of the Federal Republic of Germany


Age
Year of study
25
24
23
22
21
20
19
Third level
19
18
17
16
15
Second level II
16
15
14
13
12
11
10
Second level I
10
9
8
7
6
5
4
3
First level
Pre-primary
Fachschulen
Berufspraxis
BGJ
Orientierungsstufe
Grundschulen
Kindergarten
Main outflows
Main inside flows
Schooling / Higher education
Practice-oriented education
Part-time education

According to: OECD (1989), p. 115.

tional training, the qualification for studies at *Fachhochschulen* can also be acquired at other vocational institutions such as trade and technical schools (*Fachschulen*). Successful graduation from a *Fachhochschule*, or in some cases the successful completion of its intermediate examinations, fulfills the general higher education entrance requirements and thus confers the right to enroll in university-level programmes. For employed persons who do not hold the general qualification certificate, some *Länder* offer the opportunity, to particularly gifted persons, to enter higher education upon passing a special examination.

- Types of Higher Education Institutions

In what follows, the seven types of institutions which make up the present system of higher education are briefly described. Their numerical development is illustrated in Table 1; for the *Fachhochschulen*, which did not exist as such before 1970, the enrollments of their forerunner-institutions are reconstructed. The quantitative development makes clear what a large increase in enrollments German higher education has had to deal with since 1960, especially in the universities, the *Gesamthochschulen*, and the *Fachhochschulen*.

Universities:

Universities, in the present system, include the technical universities, which have traditionally been focussed on natural science and engineering, as well as some specialized university-level institutions. Since the 1960's, a number of new universities have been founded which do not, for the most part, offer the entire spectrum of traditional fields. This situation has resulted in increased heterogeneity in the course offerings of universities (see Chapter 2.2). Research and the privilege of awarding academic degrees, in particular the doctorate, as well as granting the qualification for university teaching in a particular discipline (*Habilitation*) belong to the traditional and legally anchored basic rights of universities. These functions and rights are what characterize them as "scholarly" institutions. The scheduled period of study leading to a first university degree lasts four to five years (six years in medicine, three to four years in the course programmes corresponding to the former teacher training colleges).

Theological Seminaries:

There are currently sixteen institutions of this type under church sponsorship which exist alongside the theological faculties of the universities. Among them are five Protestant institutions (*Kirchliche Hochschulen*), eleven Roman Catholic institutions (*Philosophical-theological Hochschulen*), as well as the Institute of Jewish Studies in Heidelberg founded in 1981. Some theological seminaries also have the right to confer doctoral degrees and the qualification for university teaching (*Habilitation*). All these institutions have very small enrollments.

Teacher Training Colleges:

While the education of *Gymnasium* teachers has always included university studies, teachers at primary and lower level secondary schools used to be trained at special teacher-training institutes. There were about 80 of these institutes at the beginning of the 1950's; by the end of the 1960's, their number had grown to 100. In the early 1970's, around thirty such institutes were consolidated into independent teacher-training colleges, some of which were empowered to confer the doctorate; other institutes were integrated into the existing universities or expanded into new universities or *Gesamthochschulen*. This process has continued. Independent teacher training colleges today only exist in the two *Länder* of Schleswig-Holstein (2) and of Baden-Württemberg (7). The decrease in enrollment at teacher training colleges between 1970 and 1987 (see Table 1) is thus primarily the result of their incorporation into the universities. Simultaneously however, the oversupply of

Table 1

Institutions of the System of Higher Education and Student Enrollment: 1960 - 1987

Type of Institution numbers 1987	Students							
	1960 abs.	%	1970 abs.	%	1980 abs.	%	1987 abs.	%
Universities (61)	210,700	69.3	350,100	66.7	727,700	70.3	953,800	67.6
Gesamthochschulen (7)	-		-		69,400	6.7	93,400	6.6
Teacher Training Colleges (9)	ca. 33,100	10.9	58,800	11.2	19,100	1.8	9,400	0.7
Theol. Seminaries (16)	2,800	0.9	1,600	0.3	2,200	0.2	3,400	0.2
Art Academies (28)	8,300	2.7	11,500	2.2	18,000	1.7	22,200	1.6
Fachhochschulen[1] (99)	ca. 49,200	16.2	ca. 102,800	19.6	173,300	16.7	293,200	20.8
FH for Public Administration (24)	-		-		25,500	2.5	35,400	2.5
Total (244) 1960 = 100 %	ca. 304,100 = 100 %	100	ca. 524,800 = 173 %	100	1,035,200 = 345 %	100	1,410,800 = 464 %	100

1) 1960 and 1970 students at forerunner institutions.

Source: 1960 and 1970: Statistisches Bundesamt: Statistische Jahrbücher 1962, 1972; Fachhochschulen (or forerunner institutions): see Wissenschaftsrat (1983), Stat. Anh., p. 47. 1980 and 1987: Statistisches Bundesamt: Studenten an Hochschulen, WS 1980/81; WS 1987/88 (Vorbericht).

Table 2

Student Enrollment by Type of Institution and Area of Study: 1987

Area of Study	Universities[1] (1,060,000) %	Art Academies (22,200) %	Fachhochschulen (incl. FH for Public Admin.) (328,600) %	Total (1,410,800)
Language/Humanities/Sports	27.4	0.2	1.8	21.0
Law/Economics/Social Sciences	25.5	3.3	36.7	27.7
Mathematics/Natural Sciences	19.2	-	5.3	15.6
Medicine	10.2	-	-	7.7
Agricult./Forestry/Food Science	2.4	-	3.3	2.6
Engineering Sciences	12.5	6.2	48.7	20.8
Art/Art Science	3.1	90.3	4.3	4.8
Total	100.0	100.0	100.0	100.0
thereof in Teacher Training Courses	10.3	16.6	-	8.0

1) Including Gesamthochschulen, Teacher Training Colleges, Theol. Seminaries.

Source: Statistisches Bundesamt (1988): Studenten an Hochschulen WS 1987/88 (Vorbericht).

teachers since the middle of the 1970's has led to a dramatic drop in the absolute number as well as in the percentage of students pursuing teaching credentials.

Art Academies:

This institutional type includes ten academies for studio art (art academies in the narrow sense), 16 music conservatories, the Berlin Academy of Arts which serves both fields, and the Academy of Film and Television in Munich (the Academy of Design and Music in Bremen has the status of a *Fachhochschule*). The academies of studio art are dedicated to the professional development of artists in painting, graphics, design, and similar fields. In Berlin and Hamburg, these institutions also include architecture. Some music conservatories are also academies for the performing arts (the training of actors, singers, and dancers). Art academies also train art and music teachers for *Gymnasien*, sometimes also for lower level schools. Art academies are mostly smaller institutions. The largest by far is the Berlin Academy of the Arts (around 4,500 students in 1987). Five other art academies have between 1,000 and 2,000 students; the remaining institutions have enrollments of less than 1,000.

Gesamthochschulen
(Comprehensive Universities):

Gesamthochschulen, which have been created since 1970, exist only in the two *Länder* of Hessen (GH Kassel) and North Rhine Westphalia (five institutions and, as a special type, the correspondence university at Hagen). *Gesamthochschulen* combine the course programmes of universities, teacher training colleges, and *Fachhochschulen* as well as, in some cases, art academies. Alongside the university-type courses and the practice-related courses of the *Fachhochschule* type, *Gesamthochschulen* also offer integrated courses of study for several fields. In the integrated courses, all students begin with a common set of introductory courses, but different diplomas are awarded according to a three- or four-year programme of studies. Like universities, *Gesamthochschulen* have the right to confer the doctorate and the *Habilitation*. Graduates of three-year programmes are required, as a rule, to complete an additional one-year programme before being admitted to studies for a doctorate. Since they were introduced in the early 1970's, *Gesamthochschulen*, although maintaining the specialities of their programmes, have become increasingly similar to the universities. Since the late 1970's, they have borne the designation of "university" alongside that of *Gesamthochschule*. Today, they can be regarded as belonging to a special type of universities, much like that of the technical universities.

Fachhochschulen:

The *Fachhochschulen* were established around 1970 in the wake of an agreement among the *Länder*. The former engineering schools and other advanced vocational schools, especially those for business, social work, design, and agriculture were merged into the *Fachhochschulen*. These vocational schools had, up until then, been part of secondary level education. As the *Fachhochschulen* still have their focus in these fields, their course offerings are not as broad as those of the universities (see Table 2). Study programmes at *Fachhochschulen* differ from those at universities in their special relation to vocational practice, in their shorter duration (3 to 4 years), and in their more rigid regimen of coursework. Their orientation is clearly placed on practice and applied training. Accordingly, research plays a less important role. According to the legal provisions of the *Länder*, the research function at *Fachhochschulen* is, as a rule, tied to their training role and is limited to application-oriented research and development. Next to the universities, the *Fachhochschulen* constitute the largest portion of the higher education system with around one-fifth of the total enrollment (and one-third of the first-year students).

Fachhochschulen for Public Administration (Verwaltungsfachhochschulen):

Fachhochschulen for Public Administration , a special form of *Fachhochschule*, were created by the *Bund* and the *Länder* for the training of non-technical, middle echelon civil servants (e.g. for positions within local government, tax offices, the customs and immigration services, legal services, the police, and the post and telecommunications systems). In contrast to all the other institutions of higher education, which, as a rule, have open access, admission to the *Fachhochschulen for Public Administration* is restricted to candidates who have applied successfully to one of the various state offices and have been selected for a civil service career. While studying, the candidates are civil service trainees. They are obligated to attend classes; they do not benefit from many of the typical "freedoms" of German student life.

With the exception of the *Fachhochschulen for Public Administration*, all types of institutions of higher education belong to the West German Rectors Conference (WRK). This voluntary union of higher education institutions represents their common interests in public contexts. The universities and the *Gesamthochschulen* hold the majority in the WRK with one vote each in the general assembly of the conference; the other institutional types are represented in the assembly with only a small number of votes. For instance, *Fachhochschulen*, like art academies, are represented with one vote per *Land*. In addition to participating in the WRK, they have formed the Rectors Conference of *Fachhochschulen* (FRK) as their own representative body.

- Tendencies in Institutional Development

In the early 1970's, when far-reaching debates on the re-organization of the higher education system were going on, plans were put forth to mould all institutions of higher education into a system of comprehensive universities. The intention of these plans was to create a system of interrelated course programmes of varying content and duration, designed so as to facilitate transfer and mobility among the various institutions while making higher education as a whole increasingly accessible. These deliberations were based on varying, partly antagonistic, motives and expectations. Some parties supported comprehensive institutions as an instrument for abolishing the hierarchy of types of institutions and of degrees, for extending the research-orientation of the universities to all of the institutions of higher education, and for revising, in new and reformed study courses, both the too theoretical education of the universities and the overly practical training offered by the *Fachhochschulen*. Others aimed at a functional differentiation into teaching- and research-oriented realms, whereby the majority of students would receive their training in shorter programmes of study, and a minority would enjoy an extended research-oriented education. The various concepts of *Gesamthochschule* under discussion varied accordingly.

Although the educational policies suggested were remarkably heterogeneous, a general consensus existed during the early 1970's that the future development of higher education was to lead to some sort of comprehensive institutions. This view is equally apparent from the Science Council's "Recommendation Concerning *Gesamthochschulen*" of 1970 as well as from the 1973 General Educational Plan (*Bildungsgesamtplan*) of the *Bund-Länder* Commission for Educational Planning. Even the Higher Education Framework Act, which took effect in 1976, still postulated a combination of all the institutions of higher education into comprehensive institutions, while providing for different models ("integrated" and "cooperative" comprehensive institutions). However, by that time, the lively reform discussion as well as the political will to make so radical changes in structures had slackened. Also, the inertia of traditional institutional forms had become more clearly apparent.

The impetus for a general development toward comprehensive institutions was subsequently replaced by the concept of "differentiation" in higher education, whereby the independence of the various types of institutions was emphasized. This change was codified in the 1985 revision of the Higher Education Framework Act according to which the idea of the general model of comprehensive institutions was officially abandoned. Instead, the existence of several institutional types, existing side by side with equal value but with different training functions, was accentuated.

In this context, the revised Framework Act consciously refrained from using the notion of "scientific institution" (*wissenschaftliche Hochschule*) which is commonly used in designating university-type institutions having the privilege of granting doctoral degrees. The intention was to imply that the training offered at *Fachhochschulen*, notwithstanding their special practice orientation, is also "scientific" and to underline that higher education politics is according equal value to the different types of institutions (see BMBW 1988, p.3).

In common usage, the notion "scientific institution", has as of yet, not been completely abandoned; thus, *"Fachhochschulen"* and "scientific institutions" continue at times to be contrasted. Indisputably, there remains a vertical gradation between these two sectors of higher education in terms of institutional prestige; qualification and payment of professors as well as their research opportunities; the exclusive privilege of universities to grant doctoral degrees; and the classification and value of degrees. This gradation in higher education, with its potential tensions, has not been eliminated by the political intention that all institutional types be of equal value.

The relationships between universities and *Fachhochschulen* were recently the subject of consultations in the framework of the West German Rectors Conference (WRK). In particular, four points were at issue (cf. WRK 1988a, p. 31f.): i) the opportunities for *Fachhochschule* graduates to pursue doctorates at universities; ii) the type and extent of research and development to be pursued at *Fachhochschulen*; iii) the broadening of the spectrum of fields of study at *Fachhochschulen*; and iv) the institutional representation of *Fachhochschulen* in the science organizations (DAAD and WRK).

These consultations have shown that the *Fachhochschulen* are not, for the time being, seeking the right to confer doctoral degrees. They are demanding, however, that qualified *Fachhochschule* graduates be admitted to doctoral studies at universities without completing any additional examinations, or at least, that they be permitted to transfer their course credits to the university.

With respect to the second point, the representatives of the *Fachhochschulen* demand marked improvements in the financial and personnel provisions for research and development. At many *Fachhochschulen*, research work extends beyond training-related functions into the area of technology transfer and business consulting, often related to the interests and requirements of regional industries and businesses. The heavy teaching load of *Fachhochschule* professors (who, so far, unlike university professors, usually have no academically trained staff to aid them) and the lack of financial resources limit such research activities. In particular, the acquisition of grant money is therefore difficult. The requests of the *Fachhochschulen* that their research activities be increased have been met with reservations at the *Länder* level because of the financial implications; at the same time, they have been regarded with sympathy by the BMBW. The requests have struck a sensitive nerve in the relations between the universities and the *Fachhochschulen*, which on the part of the universities has been marked by concerns about the future division of functions and the distribution of funds between universities and *Fachhochschulen.*

The third point concerns the extent to which the training facilities at *Fachhochschulen* could be broadened to include new courses of study, especially in the areas of the humanities and the social sciences, subjects, that have so far been taught exclusively at universities. It is improbable that such a change will be made in the forseeable future. Following the political mandate for a differentiation of responsibilities, the universities claim that it is among the legitimate interests of each type of higher education institution, that one type does not interfere in the acknowledged realms of the other types by offering new study programmes.

With respect to the fourth point, the institutional representation of *Fachhochschulen*, these were granted, in 1987, membership in the German Academic Exchange Service (*Deutscher Akademischer Austauschdienst* - DAAD), an organization that mediates a large portion of the foreign relations of German higher education institutions. Their position in the West German Rectors Conference (WRK) was enhanced by securing, with the addition of a (fifth) vice-president, a constant representation of the *Fachhochschulen* in the WRK presidency.

By the late 1980's, a rather stable "two-type structure" of the higher education system has established itself (Teichler 1986). The university and the *Fachhochschule* sectors exist side by side within relatively well marked boundaries. However, the latent tension between the two sectors may well lead, from time to time, to certain changes in these boundaries.

2.2 Size, Range of Disciplines, and Regional Locations of Universities and Fachhochschulen

Distinguishing among the types of higher education institutions is not sufficient. Within the two major types, the institutions prove to be markedly heterogeneous, especially with respect to size and to range of disciplines.

- Universities
  (including Gesamthochschulen)

In the university sector, the number of institutions has doubled since 1960. In addition to the division into "old" and "new" universities, one may roughly distinguish four types of institutions: i) universities with the traditional range of disciplines and study programmes; ii) technical universities focussing on engineering and the natural science; iii) *Gesamthochschulen* (comprehensive institutions); and iv) institutions which can be designated as "special institutions" due to their specialized functions and generally small numbers of students. Table 3 illustrates the distribution of the 68 university-type institutions across these four types, their 1987 enrollments, and the extent of their course programmes.

The boundaries between the classifications suggested above are fluid, particularly in the case of the division into "old" and "new" universities. Most of the newly founded universities, especially those which came into existence in the 1970's, are organized around former institutions which were merged into the new universities. But also, some old institutions received their present form as well as the title "university" when specialized forerunner institutions were expanded (e.g. the mining school at Clausthal, the Mannheim School of Economics, as well as the technical universities). The division into old and new institutions is made according to the usual practice adopted by the Science Council (1980).

Table 3

Old and New Universities - Range of Disciplines and Enrollments: 1987
(Ordered according to 1987 Enrollments)

Type of Institution	Old Universities (33)	Enroll-ment 1987	Range of Discipl. 1984	New Universities since 1960 (35)	Enroll-ment 1987	Range of Discipl. 1984
Universities (35)	1. München, U.	62,100	80%	1. Bochum	31,600	85%
	2. Berlin, FU	56,400	82%	2. Düsseldorf	15,200	53%
	3. Köln	47,200	81%	3. Bielefeld	13,000	64%
	4. Münster	43,700	81%	4. Regensburg	12,000	72%
	5. Hamburg	41,500	84%	5. Bremen	10,200	70%
	6. Bonn	38,900	85%	6. Augsburg	9,000	60%
	7. Frankfurt	29,500	83%	7. Osnabrück	8,800	64%
	8. Göttingen	28,900	81%	8. Oldenburg	8,400	54%
	9. Heidelberg	26,700	80%	9. Trier	7,500	56%
	10. Erlangen-N.	25,700	91%	10. Konstanz	7,000	56%
	11. Mainz	25,100	81%	11. Bayreuth	6,000	59%
	12. Tübingen	23,200	81%	12. Bamberg	5,400	45%
	13. Freiburg	22,800	80%	13. Passau	5,400	53%
	14. Saarbrücken	18,000	86%	14. Ulm	5,000	22%
	15. Kiel	17,400	84%	15. Eichstätt, Kath.U.	2,100	36%
	16. Würzburg	17,100	80%			
	17. Gießen	16,900	82%			
	18. Marburg	14,200	81%			
	19. Mannheim	11,400	52%			
	20. Hohenheim	5,400	23%			
Universities/ Technical Universities (12)	1. Aachen	35,300	78%	1. Dortmund	18,000	54%
	2. Berlin, TU	28,700	72%	2. Kaiserslautern	7,500	30%
	3. Hannover	26,000	74%	3. Hamburg-Harburg, TU	690	8%
	4. München, TU	22,400	44%			
	5. Stuttgart	19,000	67%			
	6. Karlsruhe	18,900	55%			
	7. Braunschweig	15,100	64%			
	8. Darmstadt	14,300	47%			
	9. Clausthal	3,800	17%			
Universities/ Gesamthochschulen (6)				1. Essen	16,900	64%
				2. Wuppertal	12,900	56%
				3. Paderborn	12,600	59%
				4. Duisburg	11,100	57%
				5. Kassel	10,500	58%
				6. Siegen	8,300	55%
Universities/ "Special Institutions" (15)	1. Köln, Dt. Sporthochschule	5,000	2.0%	1. Hagen, Fernuniversität, GH	21,100	30%
	2. Hannover, Tierärztl. H.	1,900	0.6%	2. Hannover, Med.H.	3,600	9%
	3. Hamburg, H.f.Wirtschaft und Politik	1,900	14%	3. Erziehungswiss.H. Rheinland-Pfalz	2,700	..
	4. Speyer, H.f. Verwaltungswissenschaften	465	0.1%	4. Lüneburg, H.1)	2,300	15%
				5. Hildesheim, H.1)	2,200	8%
				6. München, U.d.Bundeswehr	2,100	..
				7. Hamburg, U.d.Bundeswehr	1,600	..
				8. Lübeck, Med.U.	1,200	8%
				9. Witten-Herdecke, Priv. H.	290	20%
				10. Koblenz, Priv.H.f. Unternehmensführung	165	..
				11. Flensburg, Priv. Nordische U.1)	51	..
Total (68)		764,700			282,500	

1) Category Universities/Special Institutions: Since 1988 the institutions in Lüneburg and Hildesheim are called universities. The private Nordic University in Flensburg was dissolved in 1989. The private European Business School in Oestrich-Winkel has been added (formerly classified as Fachhochschule).

Source: Student Enrollment: Stat. Bundesamt (1988): Studenten an Hochschulen, WS 1987/88 (Vorbericht). Range of Disciplines: assessment by the authors (see Framhein 1983, p. 136).

Not counting the special institutions, there are, more strictly speaking, 29 old and 24 new universities. Even these differ significantly in the range of disciplines and programmes which they cover as is illustrated by the number of study programmes offered: old universities offer an average of 76 study programmes; new universities, an average of 49. A better index of the breadth of offerings is the percentage of students in the entire country who would be able to study in their chosen fields at particular institutions. Using this index for the range of disciplines offered, one can see that the old universities are quite similarly arrayed. They offer a range of courses that corresponds to that chosen by at least four-fifths of the total student body. Erlangen-Nürnberg, with some engineering courses in addition to the traditional fields of university studies, has the broadest range of disciplines (91 percent). The only exceptions to this rule are the former specialized institutions: Mannheim (52 percent) and Hohenheim (23 percent).

The index also shows the extent to which the old technical universities have extended their range of disciplines beyond engineering and natural science. The range of study programmes at the technical university in Aachen almost rivals that of the traditional universities. Clausthal University, a former school of mining, has most clearly retained its specialized range of courses.

In contrast to the overall similarity of the old universities, important differences can be observed in the range of diciplines offered by the new universities. A range as broad as that of the old universities is the exception rather than the rule, the exception being the University of Bochum, the "oldest" of the new universities. The range of disciplines in the majority of the new universities is spread over a scale of about fifty to seventy percent. As a substantial expansion of these 1984 index values is rather unlikely, the range of disciplines to be offered at many new universities will remain comparatively limited.

In the early 1960's, when the Science Council had begun to introduce systemwide concepts for the development of higher education, the assumption was that the establishment of new universities would, by and large, accommodate the further growth in student enrollments and curtail the overcrowding of old universities. In 1960, the majority of the universities still had fewer than 10,000 students; only Munich had exceeded 20,000.

The actual course of development was quite different from what these optimistic ideas had suggested. All of the older universities continued to grow considerably. The enrollments of seven universities, including the technical university at Aachen, grew far beyond the mark of 25,000, that had been set, as the maximum, for cities having a population of over 1 million. In 1987, the largest universities were the Free University of Berlin with more than 50,000 students and the University of Munich with more than 60,000.

Among the new universities, only Bochum is to be counted among the "large" universities; half of the new institutions are "small" universities having enrollments of less than 10,000 students. Their present size corresponds roughly to that of the "old" universities in the early 1960's. Today, one fourth of the entire student population is attending new universities or comprehensive universities, while three fourths are enrolled in old universities.

Among the new special institutions, the largest and the three smallest deserve special mention. The largest (with regard to enrollment) is the *Correspondence University* at Hagen, which began operating as a comprehensive university in 1976. It is utilized primarily by part-time students. In 1987, its enrollment totalled 34,000 students, which is equivalent to approximately 21,000 full-time students. The Correspondence University maintains more than forty regional centers, three of them in Austria, from which it supports its students. The Correspondence University in Hagen is thus one of the "large" universities even though its study programmes only cover one-third of the entire range of disciplines.

The three smallest universities in the country, as of 1987, are a novelty on the higher education scene of the Federal Republic: Witten-Herdecke (medicine, economics, and natural science); Koblenz (economics/ management); and Flensburg (agriculture, engineering, and economics; dissolved again in 1989). These are the first *private universities* in the country (not counting the Catholic University in Eichstätt which is church-sponsored like the theological seminaries). Their establishment corresponds to the trend of differentiation in higher education, to which they contribute some color with specific training concepts.

It is possible that a few more private universities might be established. One can be certain, however, that private universities will remain a *quantité négligeable* on the higher education scene of the Federal Republic. They will not gain the prominent role which they characteristically have in the American system of higher education.

Given the differences in age, size, range of disciplines and facilities of the various university-type institutions, one might well ask whether the mantle of formal equivalence is concealing an informal hierarchy of German universities that might make itself felt in a graded attraction of professors and students or in the "market value" of their graduates. There are divergent judgments with regard to this question and only partial, none too stringent, empirical findings. One might say that there are tendencies toward a certain gradation, without their being all too evident. A marked hierarchy of universities as in the United States, England, France and other countries cannot, as yet, be observed in the Federal Republic (see Teichler 1986).

- Fachhochschulen

The *Fachhochschulen* have been derived from a variety of existing institutions that were not, unlike the universities, bound to a common set of guiding principles. This type of institution was the result of an agreement of the *Länder* and the federal framework legislation which did not, however, lead to a general standardization of this type of institution. Thus, a wide variety of *Fachhochschulen* exist alongside one another (see Table 4).

Some of the large *Fachhochschulen* offer training in several broad areas. Alongside, there are *Fachhochschulen* for engineering, business/economics, social work, art and design, and for certain specialized fields.

Of the *Fachhochschulen* for social work, fifteen are church-sponsored (nine Protestant, and six Roman-Catholic); these enroll about forty percent of the new entrants in the field of social work. In addition, there are, in other areas, another thirteen *Fachhochschulen* under private sponsorship.

The size of *Fachhochschulen* also varies widely. One third are small institutions of less than 1,000 students, thereby clearly differing from the universities. The majority (55) had between 1,000 and 5,000 students in 1987; nineteen institutions with more than 5,000 students have a size similar to universities. In 1987, the four largest institutions were the *Fachhochschulen* in Cologne (17,700), Rhineland Palatinate (16,000, on eleven campuses), Munich (15,300), and Hamburg (12,800).

- Regional Locations

Because a number of institutions of higher education, especially among the *Fachhochschulen*, have campuses in separate locations, the 244 existing institutions have 333 locations.

Table 4

Fachhochschulen - Areas of Study and Enrollments: 1987

FH with several areas (N=26)1)	Enrollment
1. Köln (Gummersbach)	17,700
2. FH Rheinland-Pfalz (Bingen, Kaiserslautern, Koblenz, Ludwigshafen/Worms, Mainz I,Mainz II, Trier)	16,000
3. München	15,300
4. Hamburg	12,800
5. FH Niederrhein (Krefeld, Mönchengladbach)	9,500
6. Münster (Steinfurt)	9,100
7. Aachen (Jülich)	8,900
8. Düsseldorf	8,300
9. Dortmund	8,000
10. Nürnberg	7,500
11. Darmstadt	7,300
12. Gießen/Friedberg	7,000
13. Wiesbaden (with 3 more locations)	6,200
14. Bielefeld (Minden)	6,100
15. Würzburg-Schweinfurt	5,800
16. Regensburg	5,100
17. Kiel (Eckernförde, Rendsburg)	4,800
18. Hannover (Nienburg)	4,300
19. Bremen, H.	4,200
20. Osnabrück	3,700
21. Hildesheim-Holzminden (Göttingen)	3,300
22. Saarbrücken	3,000
23. Coburg (Münchberg)	2,800
24. Fulda	2,500
25. FH Nordostniedersachsen (Lüneburg, Buxtehude, Suderburg)	2,200
26. Landshut	1,400

FH with 2 areas (N = 14) (usually: Engineering and 1 other area)	
1. Frankfurt	7,300
2. Bochum (Gelsenkirchen)	6,500
3. Rosenheim	3,600
4. Augsburg	3,500
5. Heilbronn	3,000
6. Braunschweig-Wolfenbüttel	2,800
7. Wilhelmshaven	2,500
8. Reutlingen	2,500
9. Aalen	2,200
10. FH Ostfriesland (Emden, Leer)	1,900
11. Nürtingen	1,800
12. Kempten	1,600
13. Flensburg	1,400
14. Ravensburg-Weingarten	1,200

FH with specialized areas (N = 10)	
1. Weihenstephan (Agrar- u. Forstwiss.; with 2 more locations)	2,200
2. Stuttgart (FH für Druck)	1,100
3. Sigmaringen (Bekleidungs-, Haushalts- und Ernährungstechnik)	700
4. Stuttgart (Bibliothekswesen)	600
5. Köln (Bibliotheks- u. Dokumentationswesen)	500
6. Heidelberg (FH Berufsförderungswerk/Rehabil.)	300
Private FH	
1. Isny (Chemie, Physik)	300
2. Wiesbaden (Priv. FH Fresenius; Chemie)	250
3. Bonn (Priv. FH f.d. öffentl. Bibliotheksw.)	35
4. Nürtingen (Priv. FH f. Kunsttherapie)	22

FH for Engineering (N=20)	Enrollment
1. Berlin	5,200
2. FH Lippe (Lemgo, Detmold)	4,100
3. Karlsruhe	3,900
4. Märkische FH (Iserlohn, Hagen)	3,800
5. Esslingen	2,900
6. Lübeck	2,200
7. Konstanz	2,200
8. Mannheim	2,200
9. Stuttgart	2,000
10. Ulm	2,000
11. Furtwangen	1,500
12. Offenburg	1,400
13. Bremerhaven, H.	1,100
14. Oldenburg (Elsfleth)	1,000
15. Dieburg (FH der DBP)	900
16. Biberach a.d. Riß	800
17. Berlin (FH der DBP)	600
Private FH	
1. Wedel (Priv. FH)	1,000
2. Bochum (Bergbau/Westf.Berggew.kasse)	1,000
3. Köln (Priv. Rheinische FH)	900

FH for Business/Economics (N=4)	
1. Pforzheim	2,800
2. Berlin	1,600
Private FH	
1. Rendsburg (Private Fern FH)	2,000
2. Oestrich-Winkel (Europ. Business School)2)	600

FH for Social Work (N=18)	
1. Berlin	700
2. Esslingen	650
3. Mannheim	400
Private Protestant FH	
1. FH Rheinland-Westf.-Lippe (Bochum)	1,250
2. Hannover	800
3. Darmstadt	650
4. Nürnberg	550
5. Freiburg	500
6. Berlin	500
7. Reutlingen	400
8. Ludwigshafen	350
9. Hamburg	150
Private Catholic FH	
1. FH Nordrhein-Westfalen (Aachen, Köln, Münster, Paderborn)	2,700
2. München (Benediktbeuern)	1,350
3. Freiburg	850
4. Mainz	500
5. Kath. FH Norddeutschland (Osnabrück, Vechta)	450
6. Reutlingen	200

FH for Art and Design (N=7)	
1. Bremen (H.f. Gestaltende Kunst u. Musik)	700
2. Pforzheim	400
3. Schwäbisch-Gmünd	300
4. Mannheim	200
Private FH	
1. Ottersberg (freie Kunst-Studienstätte)	400
2. Konstanz (Bodensee-Kunstschule)	57
3. Stuttgart (Private FH Merz)	15

1) Usually: Engineering and/or Business/Economics, Social Work, Design, specialized areas.
2) As of 1989, the private European Business School in Oestrich-Winkel is classified as university.

Source: Statistisches Bundesamt (1988): Studenten an Hochschulen WS 1987/88 (Vorbericht), S. 18 ff.; BLK/BA (1988): Studien- und Berufswahl.

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Their regional distribution is illustrated on the map of locations (see Figure 3).

As the map indicates, the "middle west" of the Federal Republic, along the Münster-Bochum-Frankfurt-Stuttgart axis, has a dense net of universities and *Fachhochschulen*. This axis connects regions with high population densities. Another concentration of institutions is found in the heavily populated areas around Hamburg and Munich. Apart from these centers, the north and the southeast have more empty spaces with regard to higher education institutions, a characteristic which corresponds to the low population density of these regions.

The establishment of new universities and the expansion of the entire sector of higher education was intended primarily to increase the capacity of the higher education system. But the pursuit of regional-political goals, in the context of the joint task of construction in higher education, also played a role. Unlike the medieval tradition of "itinerant scholars" and the usual mobility of the students in the old German university system, a large portion of the students in the Federal Republic of today have "sedentary" tendencies and prefer institutions close to their homes. For this reason, the regionalization of higher education was also seen as a factor to improve equal opportunities for access to higher education. Accordingly, a number of new universities have been established in border-line regions of the Federal Republic that had hitherto been devoid of such facilities. The low population density of these regions contributes to the relatively small size of these institutions. Constance, Trier, Passau, Bamberg, and Bayreuth are typical examples of such new universities on the periphery of the country.

As a whole, the regional opportunities for higher education in the Federal Republic have increased considerably since 1960, a development in which the *Fachhochschulen* have taken on a special role. However, due to the often narrower range of disciplines at the new universities and the specialization of the *Fachhochschulen*, regional facilities are still more unevenly distributed than the map of locations might indicate. The regional network of facilities will most likely not become tighter in the coming years.

2.3 Internal Organization of Higher Education Institutions

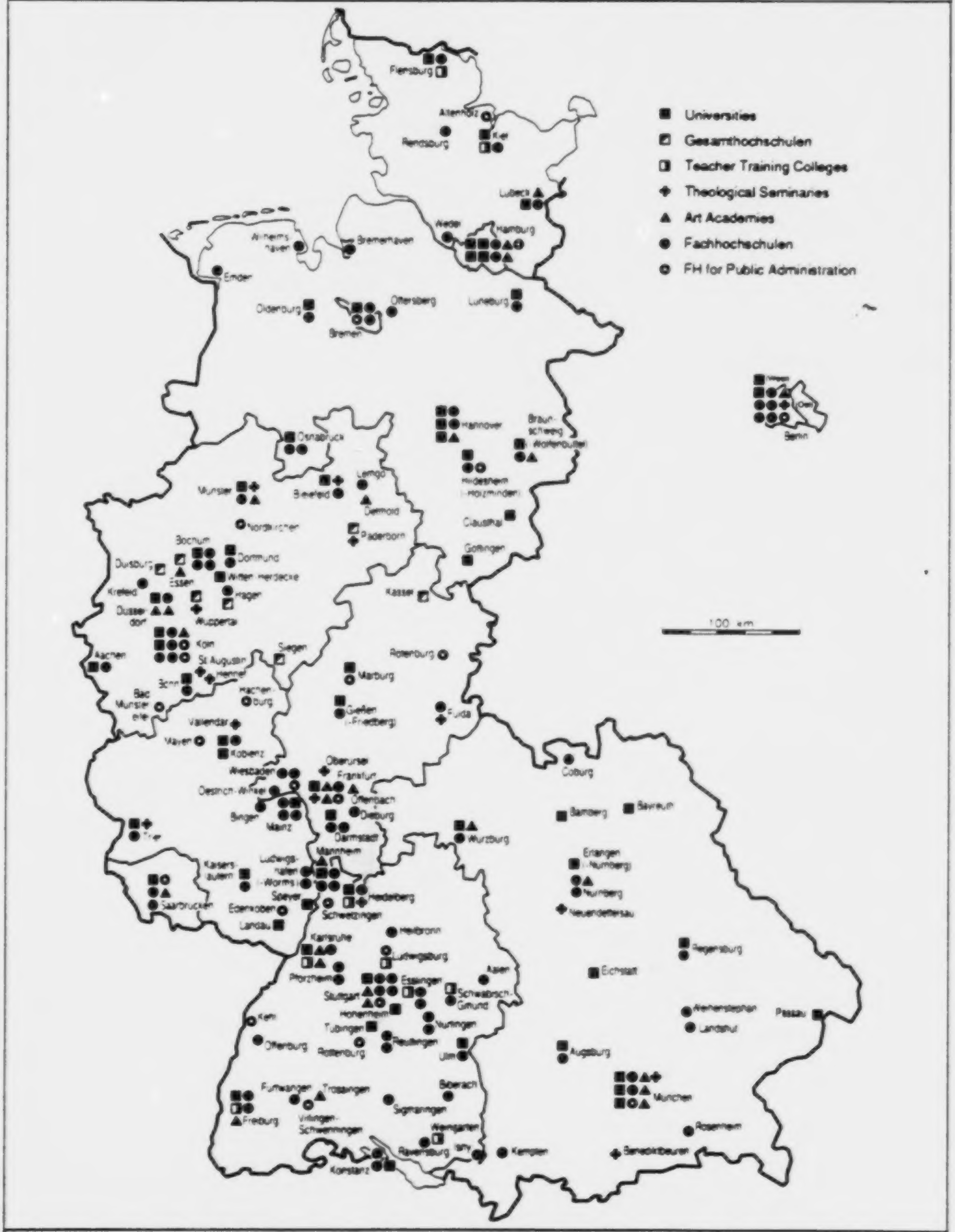
With few exceptions, the institutions of higher education in the Federal Republic are public institutions of the *Länder* with the right to self-governance. In addition to financing higher education, government action extends to setting the legal framework for institutional self-governance. The structures of this self-governance have changed fundamentally over the last twenty years.

Until the 1960's, the academic self-administration of the universities was carried out, in the main, by the *Ordinarien* (chaired professors). The most important basic unit of self-administration was the professorial chair, often associated with an institute or a seminar. In the realm of his unit, the *Ordinarius* was virtually free to make his own decisions with regard to research and teaching, personnel, and budgetary matters. The faculties, as the assembly of *Ordinarien*, were responsible for the broader questions of research and of teaching. They had the right to confer doctoral degrees as well as those degrees that entitled individuals to teach in universities (the *Habilitation*). They also had the right to nominate candidates when new professors were to be "called". Above the faculties, the senate and the rector were responsible for the co-ordination and leadership of the university. They were elected from the faculties, usually for one-year terms of office.

Because of the extraordinary position of power held by the *Ordinarien* in this system, the

Figure 3

Locations of Institutions of Higher Education in the Federal Republic of Germany (as of 1988)


■ Universities
▨ Gesamthochschulen
◧ Teacher Training Colleges
✚ Theological Seminaries
▲ Art Academies
● Fachhochschulen
○ FH for Public Administration
100 km
Flensburg
Altenholz
Rendsburg
Kiel
Lubeck
Wedel
Hamburg
Wilhelmshaven
Bremerhaven
Emden
Oldenburg
Bremen
Ottersberg
Luneburg
Berlin
Hannover
Braunschweig
Wolfenbuttel
Hildesheim (-Holzminden)
Osnabruck
Munster
Bielefeld
Lemgo
Detmold
Nordkirchen
Paderborn
Clausthal
Gottingen
Bochum
Dortmund
Duisburg
Essen
Witten-Herdecke
Krefeld
Hagen
Dusseldorf
Wuppertal
Kassel
Koln
Aachen
St. Augustin
Hennef
Siegen
Bonn
Bad Munstereifel
Hachenburg
Rotenburg
Marburg
Gießen (-Friedberg)
Fulda
Vallendar
Mayen
Koblenz
Oberursel
Wiesbaden
Frankfurt
Oestrich-Winkel
Offenbach
Bingen
Mainz
Dieburg
Darmstadt
Trier
Coburg
Bamberg
Bayreuth
Wurzburg
Mannheim
Kaiserslautern
Ludwigshafen (-Worms)
Speyer
Heidelberg
Schwetzingen
Saarbrucken
Edenkoben
Landau
Erlangen (-Nurnberg)
Nurnberg
Neuendettelsau
Heilbronn
Karlsruhe
Ludwigsburg
Pforzheim
Esslingen
Aalen
Stuttgart
Schwabisch-Gmund
Hohenheim
Regensburg
Eichstatt
Kehl
Tubingen
Nurtingen
Weihenstephan
Landshut
Passau
Offenburg
Rottenburg
Reutlingen
Ulm
Augsburg
Furtwangen
Trossingen
Biberach
Munchen
Freiburg
Villingen-Schwenningen
Sigmaringen
Weingarten
Rosenheim
Ravensburg
Isny
Kempten
Benediktbeuern
Konstanz

Draft: H.Peisert / G.Framhein, according to Statistisches Bundesamt: Studenten an Hochschulen WS 1987/88.
(Main locations only; regional branches are usually not shown. Boundaries of the Länder.)
Cartography: Bundesforschungsanstalt für Landeskunde und Raumordnung.

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German university was characterized as an *"Ordinarienuniversität"*. The remaining members of the university, non-chaired professors, sub-professorial academic staff members, students, and non-academic personnel, were, for the most part, excluded from the decision-making processes.

As the universities evolved into large-scale enterprises for research and teaching, the *Ordinarienuniversität* proved to be an ineffective system. The principal goals of reform included the reorganization of the institutions into manageable units (larger than institutes, but smaller than the large faculties); the strengthening of the central administration; the "professionalization" of the management; and the democratization of the decision-making processes by giving all groups within the university voting powers in university committees. In this context, the notion of a "group university" (*Gruppenuniversität*) was coined and the question of "parities" in the committees (i.e. the distribution of voting rights) became a hot issue of discussion.

The new internal forms of organization and decision-making of higher education institutions have been formed through an interplay between the higher education laws of the *Länder* passed since the late 1960's, the federal framework legislation of 1976 and its revision in 1985, and a series of constitutional decisions.

Especially important for the issue of "co-determination" was the "Higher Education Decision" of the Federal Constitutional Court in 1973. It laid down basic guidelines for the legislatures, restricting those *Länder* laws which had aimed at more far-reaching provisions. Acccording to these guidelines of the Constitutional Court, the professorial group is to hold the absolute majority on university committees in any decisions immediately relevant to research and teaching as well as to the appointment of new faculty members.

In the Federal Framework Act for Higher Education, uniform guidelines were established for institutional governance to which the *Länder* had to adapt their diverging higher education laws. The *Länder* laws, in turn, provide the framework for the individual statutes or constitutions of the higher education institutions.

The federal framework legislation leaves the *Länder* a certain amount of latitude for specific provisions to be covered by *Länder* laws. This is illustrated, for example, by the variety of names used to describe the various university committees in the different *Länder* laws. Nonetheless, the federal framework permits a broad characterization of the internal structures of organisation and governance for the entire country and for all types of institutions.

The principle of the group university is confirmed in the Framework Act. It ensures the participation of all members, differentiated according to their functions, in the self-administration of their institutions. The members of an institution of higher education are divided into four groups: i) professors (chaired and non-chaired), ii) students, iii) sub-professorial and artistic staff, iv) non-academic staff.

All of these groups must be represented in the departmental council as well as in the two central bodies of the institutions. The distribution of votes on these bodies must respect the 1973 decision of the Federal Constitutional Court mentioned above. Since the revision of the Framework Act in 1985, the professors have once again gained the absolute majority on all committees, not just with regard to certain issues.

The basic organizational units of the institutions are *departments* (*Fachbereiche*; sometimes also called "faculties"). They are headed by departmental councils, each one chaired by a professor. Departments either consist of the members of one large academic field or of several smaller, related fields. Hence, the department replaces the former smaller unit of a professorial chair or institute and the usually larger unit of the former faculties.

The institution is governed by a *full-time head* (president or rector) with a term of office of at least four years. This function may also be carried out by an elected presidential committee, but one committee member must serve full-time. This is a turn away from the traditional principle of rectors, alternating on short cycles, to professional institutional management positions for which external candidates may also apply. State participation exists in as much as the responsible ministry of the *Land* may veto a presidential candidate or selection.

Central tasks are dealt with by two *central composite bodies*. One of these is the "parliament" of the given institution (called, variously, the council, the convent, the consistory, the large senate, or the assembly, according to the different *Länder* laws). Its most important functions are the election of the head of the given institution and the making of decisions pertaining to its constitution. The second body, the senate, is responsible for the current operations of the individual institutions. Its most important functions relate to decisions on development and budgetary planning concerning its institution, the number of students to be admitted, the establishment of departments and scientific units, basic issues of research and academic or artistic succession, regulations for examinations, and decisions about nominations for professorships made by the departments.

In contrast to the former dual constitution which drew a clear line between the academic and the budgetary administrations, the Framework Act for Higher Education prescribes a unified administration. This means that the chancellor (the chief administrator reporting to the rector or president) takes care of the administrative matters of the institution as a whole and also participates in the administration of departmental matters and central facilities. In particular, he is responsible for the budget. His function has thus changed from that of *curator*, as the local representative of the state ministry of culture, to that of a member of the individual institution which he represents vis-à-vis the ministry of culture, within the framework of legal regulations.

The internal re-organization of institutions of higher education is the result of a long process accompanied by intense debates within the institutions and extensive interference by the State. Although there is still considerable criticism of the bureaucratization, the legalization, and the intervention of too many time-consuming, sometimes inefficient, committees, the re-organization seems to have reached a certain resting point. And on the part of the institutions, the desire for "organizational rest" seems to have outweighed the quest for new reforms.

3. Finance, Planning, and Administration

3.1 Financing the Higher Education System

The financing of institutions of higher education which, with few exceptions, are state institutions of the *Länder*, is assured primarily via the *Länder* budgets. For the annual budget proposals of the responsible ministries of culture or science to be passed by the state parliaments, the individual institutions submit detailed budgetary requests. These may be subject to modifications at various levels, which, as a rule, imply reductions. This process begins during the budgetary negotiations with the various ministries of culture, which must harmonize the competing requests of the various higher education institutions within the given limits of their budgets; in a similar way, the budget proposals of each ministry of culture may be altered when balanced against the needs of the other public functions in the processes of interministerial and parliamentary consultations.

Current expenditures for research and teaching at institutions of higher education (personnel and material costs) are financed completely via the *Länder* budgets, while investment costs (buildings and large scientific equipment) are shared by the *Bund* (fifty percent) as part of the joint task of construction in higher education.

In 1986, these expenditures, which are designated as "basic funding", came to 23.1 billion marks; of this sum, 64 percent went for personnel costs, 24 percent for current material costs, and 12 percent for investments (see Table 5). The lion's share of expenditures for higher education (around ninety percent), goes to the universities and the *Gesamthochschulen*; about half of this share is spent on the university clinics. About 7 percent of the expenditures for higher education fall to the *Fachhochschulen* (according to Hetmeier 1987, p. 792).

To obtain a realistic picture of costs, it is necessary to take into account the fact that the expenditure for higher education in the *Länder* budgets is covered, in part, by income from the higher education institutions themselves. Since the early 1970's, when tuition fees were generally abolished, this income has been primarily derived from health care services (over six billion marks), sufficient to cover more than half of the expenditures of the university clinics. Much less significant is the income from other sources, such as research projects, inspections by engineers, etc. When all this income is taken into account, the "real" cost of basic funding, for the higher education system in 1986 is reduced by one third, to 15.9 billion marks.

There are two other sources of funding which the Science Council (1988, p. 233 f.) considers as higher education financing in the broad sense. On the one hand, there are research funds which institutions or their members receive indirectly from other sources, in addition to the budgeted basic funding. On the other hand, there are funds for the financial assistance of students and graduate students.

Research funding from public sources, not counting the basic funding, totalled 1.7 billion DM in 1986. It is administered primarily via the *Deutsche Forschungsgemeinschaft* (DFG), the central autonomous academic organization for financing research projects, which is funded jointly by the *Bund* (sixty percent) and the *Länder* (forty percent). Further public funds are contributed by federal and *Länder* departments for commissioned research projects. These public research funds are supplemented by private funds from business and industry as well as from foundations (1986 in a ratio of ca. 2/3 to 1/3, see Chapter 4).

Table 5

Public Expenditure for Higher Education Institutions and the Higher Education Community: 1975, 1980 and 1986

Type of Expenditure	1975		1980		1986	
	million DM	%	million DM	%	million DM	%
I. Basic Funding (Budget for H.E. Institutions)						
(1) - Personnel (current costs)	7,958	(60%)	11,172	(63%)	14,871	(64%)
(2) - Material (current costs)	2,590	(20%)	4,065	(23%)	5,627	(24%)
(3) - Investments (buildings and large equipment)	2,642	(20%)	2,464	(14%)	2,762	(12%)
(4) Total	13,585	(100%)	17,750	(100%)	23,073	(100%)
(5) Total (4) corrected by income from university clinics and other sources	**10,391**	**76.5 %**	**13,104**	**77.9%**	**15,875**	**80.8 %**
II. Research Promotion (External Funding)						
(6) - Deutsche Forschungsgemeinschaft (DFG)	624		815		1,029	
(7) - Research Projects, Federal Government	318		336		548	
(8) - Research Projects, Länder	45		103		106	
(9) Total	**987**	**7.3 %**	**1,254**	7.5 %	**1,683**	8.6 %
III. Training Assistance, Support Measures (for Students and Graduates)						
(10) - Training Assistance for Students (BAföG) etc.			1,942		1,546	
(11) - Training Assistance for Graduates (Grafög)			303		339	
(12) - Student Housing	. .		138		77	
(13) - Talent Scholarships, International Exchange	. .		83		120	
(14) Total	**2,199**	**16.2%**	**2,466**	**14.7%**	**2,082**	**10.6%**
(15) **Total Expenditure for Higher Education (I.-III. total)**	**13,577**	**100.0%**	**16,824**	**100.0%**	**19,640**	**100.0%**
(16) Ratio of Expenditure Bund: Länder	23 : 77		18 : 82		17 : 83	
	billion DM	%	billion DM	%	billion DM	%
(17) Gross National Product (GNP) in billion DM	1,029.4		1,485.2		1,948.8	
(18) H.E. Expenditure (I.-III.) as Proportion of GNP		1.32%		1.13%		1.01%
(19) Total Public Expenditure in billion DM	360.5		509.2		627.4	
(20) H.E. Expenditure (I.-III.) as Proportion of Total Public Expenditure		3.88%		3.29%		3.12%

Explanations:
Line 1 - 4 gives h.e. expenditures as usually shown in the "education budget", i.e. not corrected for income. Time series data over a longer period are available for these non-corrected figures only. The longer-term time series reveals a more than proportionate growth of h.e. expenditures until the mid-1970's followed by a decline when measured against the GNP and total public expenditures; this is consonant with the trend revealed by the corrected h.e. expenditures from the mid-1970's onwards. In what follows we shall refer to corrected h.e. expenditures as suggested by the Science Council, i.e. net costs from which direct income has been deducted. This holds also for line 10 (cost of training assistance under the BAföG scheme, minus repayment of loans).

Source:
Line 1 - 4 BMBW (1988), p. 252, 254 - 5; line 5 - 14 Wissenschaftsrat (1988), p. 234; line 16, p. 235; line 17 - 18, p. 244; line 19 BMBW (1988), p. 14 f; line 20 authors' calculation.

For *financial assistance to students* in the broad sense, 2.1 billion DM were spent in 1986. The largest portion of this sum was spent under the Federal Training Assistance Act (*Bundesausbildungsförderungsgesetz* - BAföG), an assistance scheme financed jointly by the *Bund* (65 percent) and the *Länder* (35 percent). All students can apply for financial aid of this type, provided the income of their parents is below a certain limit (see Chapter 6). The *Länder* also finance graduate student assistance programmes (Grafög) and student housing construction (until 1982 the *Bund* participated in the financing of these programmes). Additional funding areas of the *Bund* include subsidies for organizations promoting the education of particularly gifted students and for foreign exchange programmes for students and scholars.

The total quantity of public expenditure for higher education institutions and their members thus totalled 19.6 billion DM in 1986. Of this sum, 17 percent was contributed by the *Bund*, 83 percent by the *Länder*.

The expansion of enrollments and the generally increasing importance of science and research has been accompanied, since the mid-1960's, by a more than proportionate increase in higher education expenditures when measured against that of the gross national product (GNP) or public expenditure in general. In the mid-1970's, this period of disproportionate growth came to an end (see Table 5). The percentage of higher education expenditure in the GNP dropped from 1.32 percent in 1975 to 1.01 percent in 1986, its percentage of public expenditure dropping from 3.8 percent to 3.12 percent during the same period.

These developments in higher education financing have been thoroughly analyzed by the Science Council (1988, especially p. 243 ff.). According to this analysis, the portion of the GNP represented by higher education has dropped mainly because current expenditures for higher education in the *Länder* budgets have increased very little since 1975, while the GNP and public expenditures in general have experienced real growth. In addition, investments in higher education construction have dropped, particularly between 1975 and 1980, and financial aid has been considerably cut back since 1982. The only element of public higher education expenditure to have marked a real increase, beyond inflation, since 1980 has been the funding for research promotion.

Connected to these developments is the *Bund's* declining participation in public expenditure for higher education institutions and its members. In 1975, the year which marked the high point in construction investments, the share of the *Bund* in the financing of higher education came to 23 percent; in 1986, it was only 17 percent. Alongside the (real) drop in investments, the conversions of the BAföG scheme and the *Bund's* retreat from co-financing graduate student support and student housing construction contributed to the relative fall-off in federal financing. This trend was somewhat softened, but not at all balanced, by the certain rise in external funding of research.

Although student numbers rose dramatically during the 1980's (from about 1 million students in 1980 to almost 1.5 million in 1988), institutions of higher education had to make do with roughly the same (but price corrected) funding levels for their regular research and teaching functions. In view of a new enrollment pinnacle, higher again in 1988, higher education is making increasingly urgent requests for a visible increase of resources. Despite the restrictive attitude taken by the *Bund* and *Länder* finance ministers, a financial special purpose programme with a budget of two billion DM for 1989-1996 has meanwhile been passed on this account.

That the basic funding of higher education for current expenditure in research and teaching did not grow adequately can be demonstrated

Table 6

Expenditure per Student by Type of Institution and by Area of Study: 1986
(Current expenditures for teaching and research, not counting investments)

Area of Study	Proportion of Students in this Area %	All Institutions DM	Universities[1] and Art Academies DM	Fachhochschulen DM
Law/Economics/Social Sciences	27.2	6,100.-	6,300.-	5,300.-
Language and Humanities	26.3	8,500.-	8,500.-	7,700.-
Engineering	20.7	10,800.-	16,600.-	6,100.-
Mathematics/Natural Sciences	15.5	17,400.-	18,300.-	6,600.-
Human Medicine	7.2	35,400.-	35,400.-	-
Agriculture	2.6	14,500.-	17,500.-	6,600.-
Veterinary Medicine	0.5	29,100.-	29,100.-	-
Total	100.0	11,900.-	13,400.-	6,000.-

1) Including Gesamthochschulen, Teacher Training Colleges, Theol. Seminaries

Source: BMBW (1988): Grund- und Strukturdaten 1988/89, p. 142 and 221.

by a computation of the costs per student. In 1980, the average resources of higher education available per student was 12,450 DM; by 1986, it was only 11,900 DM, with, of course, wide variations in costs from institution to institution and from field to field (see Table 6).

Assuming the average duration of a student's education (as in BMBW 1988, p. 218), the average expenditure per university graduate is 82,000 DM, ranging from 36,000 DM for a student in law, economics, or social science, to 237,000 DM for the training of a medical student. For the training of students at *Fachhochschulen*, an average of only 23,000 marks of public funds is provided.

3.2 Forecasting Enrollments

A basic guideline for planning the required capacities in higher education is the number of students to be expected. The first estimates and model calculations for this purpose were elaborated in the framework of the Conference of Ministers of Culture (KMK) and the newly formed Science Council in the early 1960's when enrollments were already in the take-off phase for the heights which they would reach. The activities in question marked the entering into unexplored territory so far as educational planning was concerned. Planning was intensely undertaken during the early 1970's, a period in which the climate was generally favorable to it, and the *Bund* and the newly formed *Bund-Länder* agencies were pinning down their medium and long range concepts of reform. In part, these estimates dealt with political targets and schemes for their step by step realization, in part with the extrapolation of trends. These calculations had to be made using statistical data which were inadequate in many respects. The result was a highly confusing plethora of conflicting models and forecasts of future enrollments, all of which were compiled by official bodies (see Peisert 1980).

The forecasting activities, for which the KMK has over the course of time acquired a certain monopoly, have continued apace during the last ten years. The KMK does not mean to set political goals with these forecasts but rather to describe the range within which probable enrollment changes will occur. It can meanwhile rely on routine procedures and improved statistical data as well as on the supplementary investigations of the choices which young people are making with regard to training and education, as provided regularly since 1976 by the HIS GmbH.

Nonetheless, the prediction of enrollments remains a very uncertain activity. The two most recent KMK forecasts, from 1987 and 1989 through 2010 respectively, are a case in point. The forecast as of 1987, for instance, was outrun by actual developments in the year of its publication. The maximum estimate of 1.34 million students predicted for 1987 was overshot by ca. 70,000; that for 1988, by ca. 150,000 (see Figure 4). A mere one-and-a-half years later, in 1989, the KMK published a revised forecast that overshot the maximal variants of the previous forecasts for the year 2000 by a range of 120,000 to nearly a half million (+ 457,000) students. These revisions are justified by the expected higher number of new entrants and a new assessment of the future average duration of study; they now realistically take into account the proposition that the current lengthy duration of studies might not be shortened.

That present developments frequently negate forecasts is a result of the uncertainties in the career and training choices of young people. Interacting with fluctuating surrounding conditions such as the labor market, the availability of financial aid for students, and the swings of public opinion about the *pros* and *cons* of academic training, the training choices are subject to unexpected changes which make very difficult the achievement of accurate predictions.

Among the many variables that must be assessed in order to forecast enrollments, four are particularly significant:

- The demographic strength of the age-group concerned (18 - 21 year olds), which in the Federal Republic has experienced extraordinary fluxes between 1950 and the present day (as projected to 1995);
- the "qualification quota" or the portion of secondary school leavers qualified to enroll in higher education at a university or a *Fachhochschule*;
- the "enrollment quota" or the percentage of qualified secondary school leavers actually entering higher education and the point in time at which these persons will actually enroll: directly after completion of secondary schooling or later;
- the duration of study.

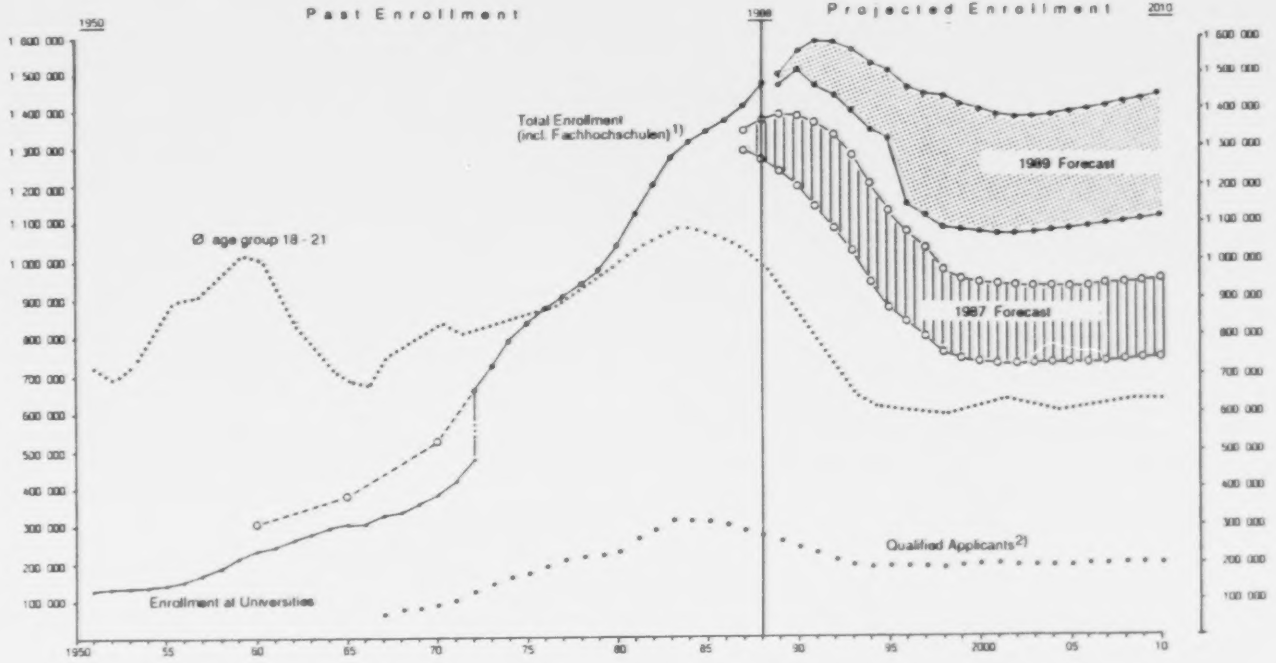
Looking back over 25 years of experience in the forecasting of student numbers, one can understand a great deal by observing which of these factors was particularly uncertain at given points in time, thus requiring the inclusion of alternative estimates in the forecasts, so as to determine the range of a given forecast.

During the 1960's, the future development of the *qualification quota* was uncertain. At that time, about seven percent of an age-group completed the *Abitur*. For 1980, a qualification quota between six and and twelve percent was expected (the actual value reached seventeen percent in 1980 and twenty percent in 1981). Today, 22 percent of the members of an age-group complete the *Abitur*, and a total of 28 percent qualify for higher education (including those who qualify for studies at *Fachhochschulen*). It is assumed that the qualification quota will surpass thirty percent during the next few years.

Forecasts made during the 1970's varied with regard to the *duration of studies*, i.e. the average length of time that students in higher education take to complete their studies. These forecasts were related to the goal of reducing the actual length of studies and thereby relieving the burden on the already overcrowded

Figure 4

Past and Projected Enrollment Trends: 1950 - 2010



1) 1960 to 1972 forerunner institutions of Fachhochschulen.
2) Secondary school graduates with general higher education entrance qualification (Abitur) or Fachhochschule entrance qualification.

Source: KMK (1987 and 1989) and Peisert / Framhein (1980), p. 194 ff.

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institutions of higher education. For example, the length of time needed to complete a university education was assumed in the 1976 KMK forecast with variants of 4.7 and 6 years (actually, it continued to rise to over 7 years). With respect to this critical point, which has long been a focus of discussions about higher education, the hope has been abandoned, at least for forecasting purposes, that the coming years will witness basic changes. The new KMK forecast of 1989 assumes durations ranging from clearly raised target values to a prolongation of the status quo, that is, from 6.25 to 7.35 years at universities and 4.0 to 4.65 years at *Fachhochschulen* (see KMK 1989).

During the 1980's, the uncertain development of *enrollment quotas* moved into the foreground and was, in its turn, included with alternate variants, in forecasting student numbers. While earlier, over ninety percent of the qualified school leavers had entered higher education, this "willingness to study" began to decline noticeably in the mid-1970's. In part, this reluctance has turned out to be only a delay with regard to enrollment in higher education, a trend in which double-qualifications (apprenticeship and higher education), waiting periods for admission to certain programmes, etc., are playing a role. When in 1984 and in 1985 the number of entering students declined for the first time in the history of the Federal Republic, this phenomenon was interpreted as the continuation of the trend of decline in the willingness to study. It also seemed to signal that the peak in enrollments would be reached earlier than had been expected on demographic grounds. In the 1987 KMK forecast, this interpretation was acted on by reducing the estimated range of the enrollment quotas to a level of 60 to 80 percent.

In the meantime, the decline in the number of entering students in 1984 and 1985 proved to be a temporary phase. The number of new entrants, as well as total enrollments, climbed to a new high in 1988. The latest KMK forecast (1989) has therefore assumed, once again, a higher range of enrollment quotas, between 70 and 80 percent. How enrollment quotas will actually develop and, in particular, the extent to which school leavers of former years will cash in their unused entrance qualifications for higher education, is difficult to tell at this point. Consequently, future developments remain uncertain.

While varying with regard to detail, the overall patterns of the various enrollment forecasts for the 1980 to 2000 period are the same. The curves follow the impressive pattern of enrollment peaks and dips that coincide with the demographic fluctuations of 18- to 21-year-olds (see Figure 4). However, in the course of time, the expected peak enrollment has shifted from 1988 to 1992, and the range of assumed developments exhibits such strong parallel shifts from forecast to forecast that - despite their wide ranges - the 1987 and 1989 forecasts never overlap (see Figure 4). This fact corresponds to a rise in the expected maximum number of students from 1.38 million in 1989 (in the 1987 forecast) to 1.58 million in 1992 (in the 1989 forecast). A rapid drop in enrollments, culminating in a predicted low point between 700,000 and 900,000 in the year 2005, has long been expected after 1992. However, the latest forecast deviates from this impressive pattern in that its minimum value does not drop below one million and enrollments are predicted to rise again as of the year 2000.

Given the notorious uncertainty of such forecasts, one must ask whether or not the drop in enrollments will actually occur or whether it is conceivable that the enrollments will remain at or near the high levels already reached. The situation in the USA is a case in point. The "enrollment crisis" predicted for the 1980's in this country on the basis of demographic trends did not occur. Instead, the demographic slack has been taken up by members of groups which had not yet participated fully in higher education. However, the drop in the number of college-age persons in the USA was "only" 25 percent, while in the Federal Republic it is 40 percent. A demographic drop of this size is unparalleled in other European countries.

One could also refer here to the comparable situation in the Federal Republic during the 1960's, when the demographic drop in the number of 18- to 21-year-olds did not lead to an equal drop in the number of students (see Figure 4, left side).

At that time, the demographic downswing was counteracted by an educational boom within major sectors of the population, boosted by a political campaign for higher enrollments in upper secondary schools and higher education, which were at a very low level at that time. Whether such a development could occur once again at today's enrollment level or, on the contrary, whether the enrollments will follow the demographic downswing, remain, as of now, open questions.

3.3 Space and Personnel Capacities

The steep climb in the number of students has made unusual demands on the space and personnel capacities of the higher education system and has brought about new planning processes. These were guided politically by three important factors: the individual demand for higher education, the demands of the labor market, and the availability of public funding. These three factors, difficult to predict in their development and occasionally giving contradictory signals, formed the context of argumentation without presenting any clear planning goals. While since 1969 the expansion of space capacities has been pushed by *Bund* and *Länder* as a "joint task", the expansion of personnel capacities is the sole responsibility of the *Länder*.

- Space Capacities

In 1969, the same year that constitutional amendments paved the way for the joint planning and financing of construction in higher education, the Higher Education Construction Act was passed (*Hochschulbauförderungsgesetz* - HBFG), by which the Planning Committee for Construction in Higher Education (*Planungsausschuß für den Hochschulbau*) was created.

At the federal level, the Minister of Education and Science (the chairman) and the Minister of Finance are members of the committee. The *Länder* are represented with one member each; as a rule, this representative is the Minister of Culture or Science. The *Bund* and the *Länder* have 11 votes each. Decisions require a 75 percent majority. The Planning Committee makes decisions which are binding for the *Bund* and the *Länder* in as much as they must be incorporated into their annual draft budgets.

The final decisions are made by the parliaments which must approve the draft budgets and pass the budgetary laws. The result may be that, in some cases, the joint framework planning by the executives of the Federal Government and the *Länder* will be disavowed by their legislative assemblies.

The object of framework planning is the expansion of physical facilities in higher education as well as the provision of large scientific equipment. In order to achieve this goal, a four-year framework plan is worked out and is revised annually. It must include all projects to be jointly realized and financed. The preparation of the framework plan follows a strict timetable decreed by the Higher Education Construction Act. The *Länder* must turn in their proposals every year by 1 March. These are then reviewed by the Science Council and forwarded with the recommendations of this body to the Planning Committee which decides by 1 July on the framework plan for the following year.

In 1971, the "First Framework Plan for Construction in Higher Education, 1972-1975" was issued. In 1988, the eighteenth plan, for 1989-1992, was issued, thus marking almost 20 years of successful co-operative planning on the part of the *Bund* and the *Länder*. This assessment is justified even if important controversies arose over the years. In particular, in the early 1980's, when the *Bund* unilaterally reduced its financial contribution because of the deteriorating federal budget situation, some *Länder* reacted by filing suits on constitutional grounds.

The central object of framework planning is to provide and to finance "space-related" study places, referring to the space that is required in teaching and research for the education of each student. The proper expression is "main utilized space per student" (*Hauptnutzfläche pro Studienplatz* - HNF). This space includes seminar and administrative space, seminar libraries, lecture halls, laboratories, as well as the space needs of personnel. Space guidelines have been set up by the Planning Committee (for example, 4/4.5 square meters HNF per student in the humanities and 15/18 square meters HNF in natural science and engineering). For investment planning, cost guidelines per square meter of HNF have been set, and differentiated according to academic discipline and type of building.

The first stock-taking of space capacities in higher education, taken in 1971 and based on the space-guidelines stated above, indicated that 470,000 study places were available while 587,000 students were actually enrolled. This discrepancy represented a 125 percent rate of overcrowding. In 1987, the institutions provided 782,900 space-related study places. At the same time, the enrollment had reached 1.36 million students thus resulting in a rate of overcrowding of 174 percent.

At first, the expansion of space capacities in higher education was able to keep pace with the growing number of students. But as of the mid-1970's, enrollments vastly overshot the space available (see the index values in Table 7).

In the period from 1971 until 1987, more than 300,000 new study places were created, a yearly average of about 21,000. At the same time, older facilities were modernized. Altogether some 42.6 billion DM have been spent since 1971 on the joint task of construction in higher education.

When framework planning was started, the view held was that the number of students and the number of study places should match by 1985. As the rush to higher education accelerated during the mid-1970's and the presumable pattern of the enrollment peaks and dips due to the birth rate became clearer, this goal was abandoned. In the Sixth Framework Plan (1976), the construction goal was set at facilities for 850,000 students. The aim was to "tunnel" the enrollment peak. Although on one hand, the goal was to avoid overcapacities at the end of the century, its realization, on the other hand, accepted overcrowding during the 1980's; even if the actual degree of overcrowding was not anticipated. Alongside the demographic arguments, the limited financial capacities of the public budgets was a decisive factor in this policy, as was the concern to avoid an "overproduction" of academically trained persons.

In 1987, 782,900 study places were available, which is 92 percent of the long-range goal of 850,000. If all of the projects proposed in the eighteenth Framework Plan are carried out, the goal will be 97 percent attained. Unless the most recent enrollment forecasts will lead once again to a revision of the long-range goal, a period of higher education construction will come to an end. During this period, the primary objectives were the quantitative expansion and the creation of new study places. According to present conceptions, the

Table 7

Data on the Development of the Higher Education System: 1960 - 1987 (New Entrants, Students, Study Places, Academic Staff Positions)

Year	New Entrants		Students		Study Places (space rel.)		Academic Staff Positions	
	abs.	Index	abs.	Index	abs.	Index	abs.	Index
1	2	3	4	5	6	7	8	9
1960	79,400	55	291,000	50	..	..	19,012	30
1970	125,700	88	510,500	87	..	..	53,603	84
1971	143,500	**100**	587,400	**100**	470,350	**100**	64,149	**100**
1972	155,500	108	652,540	111	545,400	116	69,946	109
1973	171,600	119	714,161	122	603,460	128	74,497	116
1974	159,334	111	764,985	130	641,560	136	77,383	121
1975	158,059	110	816,498	139	669,800	142	77,475	121
1976	158,472	110	859,471	146	688,300	146	77,341	121
1977	156,733	109	885,000	151	726,020	154	77,315	121
1978	161,860	113	906,414	154	736,651	157	77,658	121
1979	166,177	116	940,518	160	716,861	152	78,685	123
1980	182,031	127	995,630	169	733,504	156	79,577	124
1981	(not investigated)		..	..	..	..	..	..
1982	209,544	146	1,147,523	195	748,762	159	79,690	124
1983	221,655	154	1,214,275	207	760,090	162	80,424	125
1984	204,496	143	1,259,037	214	772,606	164	80,451	125
1985	190,791	133	1,282,632	218	783,322	167	80,205	125
1986	196,075	137	1,322,120	225	786,618	167	80,954	126
1987	212,439	148	1,361,310	232	782,870	166	81,397	127

Source: Planungsausschuß für den Hochschulbau: 18. Rahmenplan (18. Framework Plan, 1988), p. 13 and information from the BMBW. The table includes those institutions that have been entered into the list of institutions of the joint task of h.e. construction. Measured against all students in 1987 (1,410,800) the list encompasses 96.7 % of the entire higher education sector.

joint task, during the 1990's, shall be primarily directed at the modernization of facilities. Priorities will, in particular, include, the equipping of natural science and engineering institutes and the modernization of older university medical clinics as well as libraries.

- Personnel Capacities

While the modus for determining space capacities was developed in connection with the joint task of construction, corresponding investigations of personnel capacities were introduced under the direct pressure of individual demands for admission to higher education. Standards for dealing with this problem were set in 1972, by a landmark decision of the Federal Constitutional Court, the so-called *"Numerus Clausus-Decision"*.

Faced with growing student numbers, many institutions as of the mid-1960's introduced admissions restrictions (*numerus clausus*), especially in the personnel-intensive disciplines of medicine and the natural sciences. This practice departed from the principle of granting each student, holding the *Abitur*, i.e.

the secondary school graduation certificate indicating that one has the "maturity" to enroll in higher education, the freedom to enroll in the field and at the institution of his choice. As this practice became more and more widespread, higher education institutions and cultural administrations were deluged with lawsuits arguing that *numerus clausus* violated the basic right to a free choice of profession and place of training (Article 12 of the Basic Law).

The Federal Constitutional Court expressly emphasized in its 1972 *numerus clausus* decision the fundamental right to a free choice of profession and place of training. An absolute *numerus clausus* for new students is, according to the decision, only constitutional if:

i) it is kept within absolutely necessary limits and if the existing educational capacities supported by public means are utilized to their maximum;

ii) appropriate criteria are brought to bear when selecting students and assigning them to specific universities so that every qualified applicant has a chance and his or her personal choice of university may be considered (see *Numerus Clausus*-Decision, WRK 1977, p. 43).

As a result of this decision, the eleven *Länder* established a central agency for student placement (*Zentralstelle für die Vergabe von Studienplätzen* - ZVS, see Chapter 3.4) and found themselves obligated to develop a systematic, uniform method of determining the educational capacities in those courses of study, for which nation-wide admissions restrictions were to be applied.

The capacity regulations (*Kapazitätsverordnungen* - KapVO), which were issued in this connection, proceed primarily from the existing personnel capacities for teaching. The capacities with regard to space and equipment are only of secondary concern.

Based on the capacity regulations, a detailed bureaucratic auditing of teaching loads and performance was introduced for overcrowded fields of study. As this action was unprecedented in the history of German higher education, it was extremely controversial. Not until the procedure was replaced by broader evaluatory guidelines did it gain pragmatic acceptance in the institutions of higher education. The new guidelines are based on the *Curricularrichtwert* (standard curricular value). This standard value indicates "the amount of time necessary on the part of all participating teaching units to educate a single student in a specific course of study during the entire duration of this study programme in hours of teaching loads" (KapVO of 2.2. 1976, § 13.1; see *Wissenschaftsrat* 1978, p.11). On the basis of these standard curricular values, it is possible to establish the upper limits of student admissions in overcrowded courses of study in a way which complies with the stipulations of the *numerus clausus* decision.

Theoretically, the standard curricular values established via the KapVo are an instrument with which the "overcrowd quota" related to personnel could be determined year by year by analogy to that related to space facilities. In fact, however, this unwelcome process is only carried out reactively for disciplines in which admissions restrictions are unavoidable.

As planning standards, the standard curricular values are unsuitable because they seek, as stipulated by the constitutional ruling, to capture the absolute maximal utilization of personnel under the most burdensome of conditions. Long-range planning considerations, on the other hand, should aim at a "normal" situation in which for teaching staff and students appropriate conditions for research and teaching are re-established. Along this line, the Science Council, in 1977, proposed personnel guidelines which were set at about 20 percent below the level of standard curricular values, which were established for

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an overcrowd situation. Such planning considerations and personnel guidelines which aim at normal conditions are dreams of the future, given the present situation of extreme overcrowding. They will only become topical if the predicted drop in student numbers in fact occurs.

In reviewing the evolution of the personnel situation, one notices a very rapid growth of staff capacities during the 1960's which outstripped by far the increase in the number of students and new entrants (see the index values in Table 7). The expansion of personnel continued at a slower pace through the mid-1970's. Since then, it has, for the most part, stagnated. From 1975 until 1985, the number of positions for academic staff rose only slightly, from 78,000 to 80,000 (1986: 81,000), whereas the number of students rose from 815,000 to 1.3 million during the same period. Thus also with regard to staff capacity, the enrollment peak is "tunneled", to cite the metaphor which has been coined for this situation.

Accordingly, the student/staff ratio has deteriorated. Based on the personnel guidelines laid down by the Science Council (1978, p. 32 f.), higher education institutions briefly attained "normality" around 1974 so far as staff capacity was concerned (disregarding differences according to discipline). Compared to the situation at that time, universities in the mid-1980's were educating an additional 37 percent of students per academic staff position, and *Fachhochschulen*, an additional 52 percent (see *Wissenschaftsrat* 1988, p. 202). This information refers to advanced, pre-examination students (fourth year at a university; third, at a *Fachhochschule*), a particularly good indicator of the teaching and testing demands placed on the staff.

3.4 Centralized Student Placement

Based on the constitutionally guaranteed free choice of occupation and training institution, the *numerus clausus* decision of 1972 of the Federal Constitutional Court stipulated that admission restrictions only be imposed when the capacities of higher education institutions are being utilized to their maximum. Furthermore, it stipulated that student placement be carried out objectively with the greatest possible attention to the student's choice of place of training.

The basic principles for placement according to these stipulations have been repeatedly altered and further developed since 1972. They are laid down in the Framework Act for Higher Education and in the state contract of the *Länder* for the placement of students. For the administrative execution of student placement, the *Länder* established the Central Agency for Student Placement in Dortmund (*Zentralstelle für die Vergabe von Studienplätzen* - ZVS) in 1972.

In the first year of its existence, the ZVS had to deal with "only" ten disciplines which were restricted by a *numerus clausus*. For the winter semester of 1976/77, however, national selection procedures had to be carried out for forty disciplines, because the number of applicants exceeded the available places. This development was stopped in 1977 by the resolution of the heads of government of the *Bund* and the *Länder* "to open up higher education". This resolution led to the introduction of the "overload period" of higher education, during which the various institutions were to be used beyond their capacities so as to meet the educational demands of the baby boom age-group. By means of this strategy, a total *numerus clausus* was avoided, and a number of study programmes could be removed from the centralized placement procedure.

Among disciplines subject to nationwide admissions restrictions and to ZVS placement, three graduated placement procedures can be distinguished:

In the *distribution procedure*, every applicant is guaranteed admission, but not necessarily at the institution of his choice. This local assignment procedure thus only serves to adjust the variations in demand for different locations. It does not refer to a decision as to *whether or not* an applicant can be admitted, but only as to *where* he can be admitted. During the winter semester of 1987, four university-level study programmes were included in this procedure: business, economics, computer science, and law. As of the summer semester of 1988, law was removed from this procedure because the number of applicants exceeded only slightly the available places. The study course in business, on the other hand, increasingly a favorite choice, was shifted during the same semester into the general selection procedure, because there were more than three applicants for each place.

The *general selection procedure* forms the second stage for administering scarce capacities. It applies to disciplines in which the number of study places nationwide is not sufficient to accommodate all applicants, despite considerable over-enrollment. A pre-quota is reserved for special groups (for example, hardship cases, foreign students, second degree applicants). Apart from this pre-quota, the available places are distributed according to the average grade on the Abitur (sixty percent) and the waiting time since leaving secondary school (forty percent). The following fields were included in this procedure in 1987/88: agriculture, architecture, biology, forestry, home economics and nutrition, food chemistry, pharmacy, and psychology (representing altogether about six percent of the new entrants).

The third stage is the *special selection procedure* for the study courses in medicine (general medicine, dentistry, and veterinary medicine). In medicine, the number of applicants is so high that particularly long waiting lists need to be formed. As of its 1986/87 version, this procedure included two elements which are a novelty so far as access to higher education in the Federal Republic is concerned: i) In addition to holding the general secondary school qualification certificate (*Abitur*), all applicants must participate in a 5-hour test which relates to the requirements of medical studies and is administered once each year; ii) a portion of the available places is distributed by the institutions themselves on the basis of personal selection interviews carried out by the medical faculties.

The study places in medicine (roughly twelve percent of all new entrants) are awarded according to the following quotas:

- 10 percent are reserved as a pre-quota for special groups (hardship cases, foreign students, etc.);
- 10 percent go to the applicants with the best test scores;
- 45 percent are awarded on the combined basis of the *Abitur* grade and the test score (weighted at 55:45);
- 20 percent are awarded according to waiting-time, whereby periods spent working, in military service, or in alternative service enhance the applicant's position on the waiting list;
- 15 percent are awarded according to personal selection interviews.

Alongside the three nationwide distribution procedures, the ZVS awards places for some additional study programmes at higher education institutions in the *Länder* of North Rhine-Westphalia and Hesse. In addition, many institutions have local admissions restrictions, partly as a result of the removal of certain study programmes from the central placement procedure. In such cases, the given higher education institution makes the admission decisions itself, generally using the admission criteria of the general selection procedure of the ZVS (*Abitur* grade and time on the waiting list).

The ZVS "local assignment procedure" reassigns the applicants from more to less sought after institutions. In this adjustment process, the desire to study "at home" or at the nearest institution is given priority. Over the last ten years, around half of the students in the Federal Republic have been assigned their higher education institution by the ZVS. Between six and eight percent of the students attend an institution they did not give as their first choice; however, the "compulsory assignment" to a particular institution is often corrected by a rapid transfer of students among institutions.

The central placement procedure is sometimes viewed as a bureaucratic restriction on the free competition among institutions. The positive effects of such competition on the quality of research and teaching has been a topical issue over the last few years (see e.g. *Wissenschaftsrat* 1985).

When the enrollments again fall, as is predicted for the 1990's, the adjusting function of the ZVS may no longer prove to be necessary. As of the mid-1990's, a "natural" competition for students among higher education institutions could thus set in. To help such free-market mechanisms take hold earlier, some parties have suggested that institutions with an excess of applicants should even now be permitted to select their students themselves, according to their own achievement-oriented criteria. This practice could be modeled after the new procedures in medicine to select students via tests or personal selection interviews (see *Wissenschaftsrat* 1988, p. 109 ff.).

This competitive model must still prove to be adequate. It is tempting, at first glance, to interpret the number of applicants to a particular institution as a vote for its academic quality. However, such an assumption presupposes an attitude with regard to the selection of one's institution which, as yet, is not characteristic of the majority of German students. At present, academic questions are usually not decisive when deciding where to study; instead, external factors prevail, particularly the regional proximity to the hometown, personal and financial motives, as well as the character and atmosphere of the university town (see Framhein 1983, p. 97 ff.). Higher education institutions in densely populated areas, therefore, generally have above average numbers of applicants, while institutions in areas with low regional recruitment potentials, including a number of newly founded universities in borderline areas, are sought out by proportionately smaller numbers of applicants.

4. The Role of Research

4.1 The Importance of Research in Higher Education

In the multi-faceted research scenery of the Federal Republic, higher education institutions, to the traditional understanding and constitutive responsibilities of which research belongs, have a prominent place. In quantitative terms, the importance of the research being undertaken in higher education institutions can be measured from an examination of the research budget for all research activities. This budget is compiled in the Federal Research Report, which is issued regularly by the Federal Ministry of Research and Technology (BMFT). The research budget is based on the definition of research and experimental development (R&D) in the OECD statistics (see OECD 1981, *Frascati Manual*). The basic higher education funding enters this budget with a "research coefficient" of 30 to 45 percent, depending on the discipline concerned.

In 1987, the research budget of the Federal Republic totalled 57 billion DM, or 2.8 percent of the gross national product. Since the early 1960's, the research budget has increased tenfold. Its percentage of the GNP doubled during the same period.

The largest portion of the funding for research and development is *generated* by the private enterprise sector. In 1987, this sum totalled around 35 billion DM (61 %). The *Bund* and *Länder* contributed 22 billion DM (38 %) to R&D funding (see Figure 5).

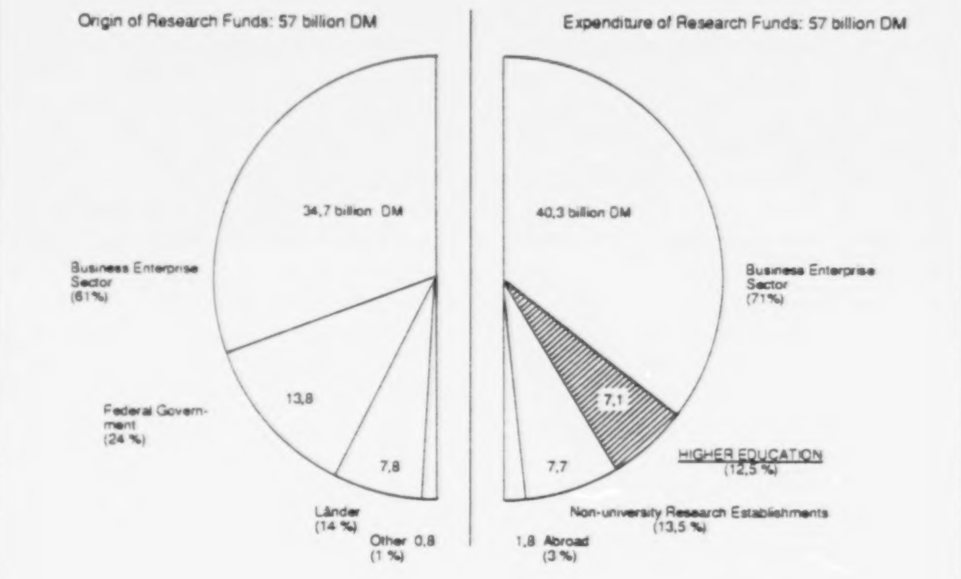
Most of this money is also *spent* in the private economy which pursues primarily application-oriented research. In 1987, 71 percent of the total research budget was spent within the private sector. Some 83 percent of these funds stem from the private economy itself. Some 15 percent are provided by public funds. On the other hand, the private sector contributes 5 percent to the publicly supported sector of non-university research institutions and higher education. Some 13.5 percent of the research budget was spent on non-university research institutes (the Max Planck Institutes etc., see Chapter 4.3), higher education receiving 12.5 percent; and research activities abroad receiving 3 percent.

During the last 25 years, the research funding derived from the private economic sector has risen much more rapidly than the public funds spent on research. In 1962, more than half of the R&D funding in the Federal Republic were derived from public funds. In 1987, the public funds amounted to a mere 38 percent. At the same time, the expenditure has shifted from higher education to the private economy and public non-university institutions. In 1962, 20 percent of the research budget was spent at institutes of higher education; in 1975, 17.3 percent; and in 1987, 12.5 percent (see BMFT 1988, p. 65).

These developments may be explained, in part, by the budgets for equipment necessary for modern, large-scale research. Such expenditures can go beyond the scope of higher education institutes. In addition, during the 1980's, research increasingly became instrumentalized as a means to economic and techno-political ends. This shift has also begun to affect higher education, tending to blur the usual distinction made between basic research, which is carried on within universities, and applied research, which is carried on outside of universities. The two realms have grown together, both with regard to the issues of research, as well as that of the overlapping of personnel. This process is supported by the governments of the *Bund* and the *Länder*, which are actively propagating and promoting science transfers between higher education and the private economy (see BMBW 1985).

Figure 5

The Research Budget of the Federal Republic: 1987
(Origin and Expenditure of Research Funds)



Source: BMFT (1988), p 65.

The importance of higher education for the research system of the Federal Republic goes beyond the proportions which it represents in the research budget. Its importance is determined by a number of special factors which distinguish higher education research from research undertaken outside these institutions. Only higher education institutions combine research with teaching and the training of the next generation of scholars and scientists. They thus provide the personnel foundation for non-university research as well as for university research. In no other research institutions are the disciplines so broadly and completely represented as in universities. Institutions of higher education thus offer particularly good opportunities for interdisciplinary research. As university research is not primarily aimed at profitable applications but at the progressive expansion of knowledge, it is thus much less dependent on cost-benefit analyses and deadlines than research conducted in the private sector. This special profile of research in higher education institutions is made possible by its primarily public funding (see *Wissenschaftsrat* 1988, p. 32).

The obligations of university professors include representing their disciplines in research and teaching, two activities which should make roughly equal claims upon their time. At *Fachhochschulen*, in contrast, teaching is stressed over research. Far fewer opportunities are given for research activities, although tendencies to increase the research activities of professors at *Fachhochschulen* have been apparent for some time (see Chapter 2.1). The difference between these two types of institutions can be easily perceived from the differences in teaching loads. Generally speaking, a university professor has a teaching load of eight semester hours of instruction per week; a *Fachhochschule* professor is obligated to teach 16 to 18 hours, thus leaving him decidedly less time to spend on research.

This difference is taken into account when the research potential of the personnel of higher education institutions is assessed in computing the research budget. The calculation proceeds from the assumption that academic personnel at universities invest approximately 45 percent of their time in research (in the humanities and social sciences, 30 to 35 percent). A value of 5 percent is assumed for *Fachhochschule* personnel (see BMFT 1988, p. 345 f.). Thus our discussion of research in this chapter will be concerned primarily with research activities at universities.

What share of his time a professor really does spend on research is very difficult to establish. In a representative poll taken during the mid-1970's (more recent data not being available), the professors themselves reported that only about one-third of their time was spent doing research. This self-evaluation can no doubt give us only a rough indication, for it is difficult to draw the line between the time spent on pure research and the time spent teaching (see Infratest 1977, p. 262 ff.). Because the 1980's have been such an overburdened period, one can assume that, on the average, the portion of a professor's time which is devoted to research has dropped.

It is instructive to review how professors, during the mid-1970's, at a time when far-reaching structural changes and growing enrollments were altering the face of higher education, looked upon the likely development of research in higher education. Nearly all professors supported the principle that research and teaching should be closely connected, 92 percent of the professors confirming the statement that if professors are no longer engaged in research, their teaching becomes sterile. And vice versa, they considered contact with students to be a stimulating factor for research (see IfD Allensbach, p. 7 ff.).

Two-thirds of the professors in the mid-1970's held that research would best be served if every professor were obligated to engage in a certain amount of teaching alongside his research. However, only one-third of those polled believed that this would generally be so in ten years. Rather, they expected that research would shift from universities to pure research institutions or that a greater differentiation would evolve within the universities between "teaching professors" and "research professors".

One can see from the perspective of today that such developments have occurred to a lesser extent than feared. As noted above, the share of funds spent on research at universities has dropped in comparison to those spent in the private sector and the non-educational public research institutions. This phenomenon, however, does not deserve to be tagged as an "emigration" to pure research institutes, particularly because there are counter-movements, and the non-educational research institutions frequently locate themselves near universities and seek their co-operation (see *Wissenschaftsrat* 1988, p. 70). Still, it is not unreasonable to expect that university research might fail to keep pace with that conducted elsewhere insofar as technology-related disciplines are concerned.

Within the universities, a distinction between "teaching" and "research" professorships has, as yet, not been established, even if changes of this sort have been repeatedly suggested. Such a suggestion refers, for instance, to the idea that professors who are particularly active as researchers be granted temporary release from teaching duties above and beyond the sabbatical semester normally granted every four years. Such a clause was explicitly introduced when the Framework Act for Higher Education was revised in 1985. However, the mutual collegial "control" of faculty members limits such a concept in practice.

In reality, the ideal of a balanced symbiotic relationship between the research and teaching lives of professors is confronted with quite diverse individual solutions. These depend on the interests of given professors; their varying engagements in academic self-administration; the respective personnel and material conditions in their universities and disciplines, in particular, the numbers of students and the resulting teaching and examination loads. An important aspect of the problem is also how successful individual researchers are in obtaining grants or "soft money" to finance their research.

4.2 Funding Procedures for Higher Education Research

The dual system of financing is characteristic of research at institutions of higher education in the Federal Republic. For their research activities, the professorial chairs or institutes can only rely on a certain amount of "basic funding" from the state budgets for higher education. The size of this sum varies depending on the discipline and the reputation of faculty members. In the case of less cost-intensive research, these funds may cover the running research costs of scholars. In the empirical and experimental sciences, but partly also in the "book disciplines", this basic funding is usually only the prerequisite for developing a research programme. The programme itself must generally be financed by applying for external grants from "third parties".

The amount of soft money spent on research in the 1980's has grown more rapidly than the basic funding obtained via the state budgets. In 1985, the external funding for research in higher education totalled 2.1 billion DM. This sum represented about one-third of the total higher education research budget (6.7 billion) of the Federal Republic. Approximately 75 percent of the external funding stemmed from public funds, 15 percent from the private economy, and 10 percent from foundations (see *Wissenschaftsrat* 1988, p. 258).

This external money should not be regarded as a second-best or a stop-gap source of funding to supplement inadequate basic funding. In the case of public funds, such financing represents a conscious re-allocation of funds which would otherwise flow in a decentralized manner into the institutional budgets. This way of proceeding has the advantage of making fund allocation conveniently elastic in reacting to research questions and to applications of individual researchers. Applications for external grants are subject to exacting reviewing and selection processes that, for the most part, depend on scientific and scholarly criteria free of governmental influence.

- The Deutsche Forschungsgemeinschaft (DFG)

By far the most important institution for external funding of academic research is the *Deutsche Forschungsgemeinschaft* (DFG). It was formed in 1951, succeeding two earlier organizations that had supported the reconstruction of scientific/scholarly research in post-war Germany. The *Deutsche Forschungsgemeinschaft* is an autonomous, academic, non-profit organization, the members of which are the universities, large research institutes, academies of science, and other scientific organizations. The purpose of the organization is stated in Paragraph 1 of the DFG statutes (DFG 1988, p. 303): "The *Deutsche Forschungsgemeinschaft* serves science in all of its branches by financially supporting research projects and promoting co-operation among researchers. It advises parliaments and public authorities on scientific matters and cultivates relations of research to the economy and links to foreign research. It pays special attention to the promotion and training of young researchers".

In 1987, the DFG budget totalled 1.073 billion DM. These were primarily public funds, which were provided by the Bund and the Länder in a ratio of about sixty to forty percent. In 1987, 4.8 million DM were also contributed by private donors. Table 8 illustrates the extent to which the various scientific fields and disciplines were funded by the DFG. Of the research funds spent, approximately 75 percent went for personnel costs and 25 percent for material costs.

The funding policy of the DFG consists mainly of three programmes: the Individual Grants Programme (*Normalverfahren*) which accounted for 40 percent of the funds distributed in 1987; the Priority Programme (*Schwerpunktverfahren* - 18 percent); and the Collaborative Research Centers (*Sonderforschungsbereiche/SFB* - 29 percent). In addition, there are special programmes for the promotion of young researchers.

The *Individual Grants Programme* is the traditional form of DFG funding. It is meant to cultivate the academic "topsoil" of the research landscape. The individual grants programme permits any researcher possessing academic qualifications to submit a grant application at any time to fund a research project in any field. There is no thematic focussing or planning in this programme. In 1987, around 6,400 grant applications were submitted in the framework of the individual grants programme, of which 4,650 were approved.

With the *Priority Programme*, the DFG began, as early as the 1950's, to plan and to set priorities in its funding policy. In the priority programmes, the co-operation of researchers at different institutions on a joint topic is encouraged and funded for a period of five to ten years. In 1987, 123 priority programmes with 1,711 individual projects were funded. Thus, within each programme, an average of forteen research projects were linked together and pursued at various locations throughout the country.

During the late 1960's, the promotion of *Collaborative Research Centers* (SFB) was initiated. This is the most extensively planned programme with regard to which universities, the *Länder*, the Federal Government, and the Science Council collaborate in the DFG committees. The collaborative research centers are meant to create a local concentration of research potential at one particular university for a specific, often interdisciplinary, research programme. For a maximum period of twelve to fifteen years, such programmes are thus pursued at institutions which are specifically equipped for the subject in terms of personnel and facilities. This way of proceeding is a conscious attempt at establishing a thematic division of labor among universities, something that was considered abhorrent at a time when research subjects were less varied and required less funding. In 1987, 160 collaborative research centers at universities and comprehensive universities were funded with a total of 325 million DM.

Research promotion by the DFG is based on the review of research applications acccording to different procedures for the three types of allocation. These procedures involve the honorary collaboration of several hundred

Table 8

Research Promotion by the DFG according to Disciplines: 1977 and 1987

Disciplines	1977	1987
1. Medicine, Nutritional Research	20.7 %	16.1 %
2. Biology	11.7	15.1
3. General Engineering Sciences and Mechanical Engineering	13.8	14.6
4. Geological Sciences (Oceanography etc.)	7.4	10.9
5. Physics	8.1	9.1
6. Chemistry	8.0	6.7
7. Social Sciences	5.2	5.3
8. Electrical Engineering, Computer Sciences	2.3	4.2
9. History and Art	6.0	3.6
10. Languages and Literature	3.2	2.6
11. Theology, Philosophy, Psychology, Pedagogics	2.6	2.6
12. Agricultural and Forestry Sciences	3.1	2.5
13. Mining and Metallurgical Engineering	1.4	2.3
14. Veterinary Medicine	1.6	1.6
15. Architecture, Urban Construction, Civil Engineering	4.0	1.6
16. Mathematics	0.9	1.2
Total	100.0 %	100.0 %
Total Research Funds in Mio. DM	702	1,031

Source: DFG: Tätigkeitsbericht 1977, p. 32 f; Tätigkeitsbericht 1987, p. 81 ff.

academics in the review and the central decison-making committees. The reviewers are elected by secret ballot every four years. The disciplinary associations nominate candidates. All active researchers who have held a doctoral degree for at least three years are invited to vote. In 1987, 445 reviewers were active in 36 review committees subdivided into 172 disciplines.

The active participation by members of higher education institutions in the committees of the DFG illustrates its character as an autonomous, self-administered organization of the research community. The central institution for the promotion of research is thus an integrating component in the decentralized system of higher education.

The DFG's procedures for research promotion and evaluation are widely accepted by the scholars who are "dependent" on the funding as well as by the financial authorities at the federal and the *Länder* levels. Although the DFG is 99 percent financed by public funds, state influence on decisions having to do with scientific matters is limited. The central committee of the DFG responsible for decisions on financial support is the Grants Committee (*Hauptausschuß*). It is made up of twelve representatives of the state, fifteen representatives of the research community, and two votes from the Donors' Association for the Promotion of Sciences and Humanities in Germany. The Grants Committee usually follows the recommendations of the elected reviewers without giving the relevance criteria applied by the state representatives undue consideration.

In the context of a systematic analysis of the reviewing process of the DFG in four selected fields, an idea originally encouraged by the Science Council, Neidhardt (1988, p. 125 ff.) confirmed the choice of the State to play a modest role in such decisions. This "nonpolitical" method of distributing public funds is consonant with the Basic Law of the Federal Republic, which specifically guarantees the freedom of scholarship and of research (Article 5 GG). Because the DFG has convincingly legitimized its role as the trustee of academic research in the eyes of all parties, it has come to be able to present the State with a "research bill", without leaving it to the State to allocate the funds.

The DFG has developed an intermediate-term planning process on which it bases its decisions about research priorities (Priority Programmes and Collaborative Research Centers) that give research at higher education institutions in the Federal Republic a certain direction. This planning procedure, like the review procedures, is carried out every four years by the researchers themselves. These "grey plans" (so named because of the color of their bindings) are, independently of their planning function, an impressive source of information about the state of the art in the various disciplines. The eight volumes published so far document the period since 1961. Grey Plan VIII was published in 1987 and contains recommendations for the promotion and the financing of research through 1990 (see DFG 1987).

- Government Funding

Alongside the *Deutsche Forschungsgemeinschaft*, the various ministries of the *Bund* and the *Länder* contribute public funds to higher education by directly financing research projects. In this way, research commissions totalling 570 million DM were given to higher education institutions in 1985. Four-fifths of this government funded research was initiated by federal ministries, above all by the Ministry of Research and Technology. The research commissions generally concern such issues within the political responsibility of ministries which cannot be addressed by the permanent research facilities of the *Bund* and the *Länder*. In part, however, these funds also have the character of supplementary research support, resembling DFG programmes. This is true, above all, of the newly defined central research promotion funds which several *Länder* have made available in the last few years. These funds are supposed to fructify the research landscape, to establish new priorities, and to improve the external grant-acquisition chances of funded projects.

- Foundations

Private foundations are an important supplement to public research funding. Although this well is not as deep in the Federal Republic as in the United States, it remains an important source of complementary, supplementary funding. In 1985, foundations and private associations which sponsored higher education institutions provided around 200 million DM in grant money. Half of these funds came from the Volkswagen Foundation. Other important foundations include the Robert Bosch Foundation, the Fritz Thyssen Foundation, the Krupp Foundation, and the Donors' Association for the Promotion of Sciences and Humanities in Germany (*Stifterverband für die Deutsche Wissenschaft*), an organization financed by annual contributions of German business enterprises.

The foundations generally only support projects of a limited duration that are oriented toward their specific research programmes. When they have initiated research activities that prove to be significant in the long run, the foundations expect government agencies to take over the long-range funding. In this way, their funds for new activities are not unduly limited. The funds of the foundations are usually distributed according to the exemplary methods of the DFG.

- Research Commissioned by the Business Community

Finally, one must call attention to the allocations of the business community which, in 1985, provided 300 million DM or 15 percent of the external research funds of higher education (see *Wissenschaftsrat* 1988, p. 258). This money was spent primarily on specific research and development commissions, especially in the fields of the natural and the engineering sciences. These funds have marked their greatest rate of expansion over the last years. The resulting interrelationships between higher education and private enterprise are not welcomed by all members of the higher education community. The influence of the private economy, oriented as it is to other ends, is regarded, to some extent, with ambivalence or rejection.

Among the most prominent issues in the debates on higher education during the 1980's have been the situation of higher education research, competition within research, and the conditions which are favorable to top-level research. In this context, an entire research discipline has been established to measure research performance (see, for example, Fisch/Daniel 1986). Alongside the classical indicators of frequency of publication and citation, the amount of external research funds raised plays an important role for the assessment of a researcher's, an institute's, and an entire university's performance. This current scientific and political discussion of performance measurement, competition, and "ranking" is characterized by controversial stands. However, it also indicates that such aspects of evaluation are beginning to play a role in the procedures of research funding.

If one summarizes the role of research at higher education institutions during the last two decades, one is astonished to discover that despite the dramatic growth in enrollments, the resulting overcrowding of the institutions and the austerity programme of the public budgets, "research" has maintained its place at the very top of the agenda. In the mid-1980's, the really precarious educational situations at higher education institutions seem to have stirred public discussions less than the needs and hopes on the horizons of research. The new DFG programme for promoting top-level research (the Gottfried Wilhelm Leibniz-Prize) is a case in point. The prize is awarded annually to twelve outstanding researchers. For a period of five years, the prize winners are provided with funds of up to 3 million DM per researcher to spend on their research without any bureaucratic restrictions.

4.3 Non-University Research Institutions

To round out this survey of research in higher education institutions, we shall also direct our attention to the publicly supported, non-university research institutions which are on roughly equal footing with university research so far as budgets are concerned. Unlike higher education, in which research and teaching are complementary responsibilities, research, supplemented by services and consulting, is the foremost aim of these institutions. The most important institutional groups of this kind are listed in Table 9.

The various institutions of non-university research have come into existence in quite different historical contexts, and each one has its specific range of responsibilities.

Most *Big Science Establishments* were founded during the 1950's and 1960's, with the aim of initiating "big-science research" in the areas of atomic physics, aerospace, data processing, and the biomedical sciences. The research directions at these institutions are

Table 9

Publicly Funded Non-University Research Establishments
(Expenditures for 1987, R & D Share only)

Non-University Research Institutes	Mio. DM
Big Science Establishments (13 Establishments)	3,309
State Institutes (thereof 48 Federal Research Institutes)	1,382
Max Planck Society (with 60 Institutes)	1,025
Fraunhofer Society (with 35 Institutes)	603
Scientific Museums	340
Scientific Libraries and Archives	84
Other Research Establishments (thereof 48 "Blue List" Institutions and 5 Academies of Science)	619
Total	7,362

Source: BMFT: Bundesforschungsbericht 1988, p. 379 f.

connected with governmental long-range programmes and have undergone a certain re-orientation in the past few years to fields such as "precautionary research" in areas of environmental and climatological science, in health and safety, as well as in the effects of technology.

Among the state institutions, we can, in particular, cite the 48 *Federal Research Institutes*, which are assigned to the particular federal ministries. The largest number of these establishments is assigned to the Federal Ministry of Nutrition (thirteen institutions for nutrition, dairy research, wine cultivation, etc.). There are also federal institutes abroad: the Institutes for History in Paris, Rome, London, and Washington; for Art History, in Florence; for Oriental Studies, in Beirut; and the newly founded Institute for Japanese Studies, in Tokyo.

Among the most well-known non-university research institutes are those of the *Max Planck Society*, which grew out of the old *Kaiser Wilhelm Society for the Promotion of Science*, founded in 1911. There are presently 60 Max Planck Institutes in which approximately 1,800 scholars are pursuing research. The creation of such institutes has often been connected with outstanding research personalities who were entrusted with institutes to develop promising fields of research. The focus is on basic research in the natural sciences. There are also some institutes specialized in the fields of law, the social sciences, and history.

The *Fraunhofer Society for the Promotion of Applied Research* was founded in 1949 and named for the physicist and glass-technology pioneer, Josef Fraunhofer. Its 35 institutes serve applied research, which is partly commissioned by industry and government, in the area of natural science and technology.

The 48 *"Blue List" Institutions* represent another important addition to the research landscape of the Federal Republic. As a rule, these institutions are funded jointly by the *Bund* and the *Land* in which the institute is located. The "Blue List" includes a broad spectrum of research institutes and support facilities for research, extending over all academic fields.

At this point, one should also point to the participation of the Federal Republic in *research establishments abroad* which accounted, in 1987, for 1.8 billion DM or no less than 3 percent of the total research budget. An international or bilateral research institute or facility is often founded when the equipment required is so expensive that it could not be optimally used in a national framework. Well-known examples of such facilities include the high-energy accelerator of the European organization of Nuclear Research (CERN) in Geneva (Switzerland), the telescope supported by the European Organization for Astronomical Research in the Southern Hemisphere (ESO) in Garching (FRG), and the operation of the largest European wind tunnel funded by the German Dutch Foundation for Wind Tunnels (DNW) in Emmeloord (the Netherlands).

The non-university, publicly-supported research institutions and the institutions of higher education receive roughly equal shares of the total research budget (approximately 13 to 14 percent) and have a mutual exchange relationship which varies in intensity from case to case. Apart from the pertinent scientific discussions conducted independently of institutional boundaries, some of the non-university institutes provide special services for the system of scientific research as a whole. In return, an above average share of "services" is expected of higher education institutions in the realm of basic research. An especially visible relationship exists at the level of personnel. First, both types of institutions recruit personnel from the same source: the young researchers trained at higher education institutions. Secondly, there is a great deal of personnel overlap in the various review, planning, and advisory commitees, as well as in the various disciplinary associations. Finally, there is a substantial number of teaching personnel in higher education from the non-university institutions, especially the Max Planck Institutes, sometimes including a direct rotation of scholars between the two areas.

5. The Organization of Studies and of Teaching

The past 25 years have been a period of intensive reflection on the system of studies in the Federal Republic, and a variety of different models for its re-organization and reform have been suggested. This process was touched off by the changing external conditions of higher education, particularly the rapidly expanding demand for higher education among young people, the accumulation and specialization of knowledge in the various fields of study, as well as the increasing demand on the part of the job market for qualified vocational training at the higher education level. These developments called for an adaption of the system of university studies that was oriented more towards pure scholarship than towards the professional fields to be entered by graduates.

The re-organization aimed at creating a lucidly arranged structure of study programmes whereby students are presented with clear guidelines; the role of higher education in the professional preparation of a student is clear; the growing amount of material in the disciplines studied is limited; and the continually lengthening duration of studies is held in check.

The formalized conception of this re-organization is laid down uniformly for all institutions of higher education in the Federal Republic by the Higher Education Framework Act of 1976 and its subsequent revisions. Realizing this conception with regard to the design and contents of studies at the local level is a continuing process in which many parties participate: members of higher education institutions, government representatives, as well as joint nation-wide commissions and committees. This process, in its turn, affects the general rules and guidelines of studies in higher education.

From a comparative point of view, the system of studies in the Federal Republic may be characterized at a general level by five typical features:

i) From the very beginning, studies are *focussed on a discipline* or combination of disciplines. The foundational general education of students for higher education is the responsibility of the higher secondary schools which certify their "maturity" for higher education (*Hochschulreife*) after the thirteenth year of schooling (or respectively, the *Fachhochschulreife* after the twelfth year). A "liberal arts education" as offered by American colleges is unknown in German higher education.

ii) University education combines *professional qualification* with *academic qualification* even if the accentuation varies among the particular disciplines and programmes. The first final degree qualifying for entry into a profession is acquired, as a rule, after a university education of at least four years. At the same time, this degree confirms the student's "maturity" for doctoral studies. A graduated system of long- and short-cycle programmes with degrees below those qualifying for a doctoral programme has not been effected at the universities. The notion of an "undergraduate" education is thus unknown in German university education.

iii) For continuing education after the first degree, the notion of "post-graduate studies" (*Graduiertenstudium*) has nevertheless come into use. Such studies take a variety of forms including the preparation of a doctorate. In contrast to what occurs in many other countries, there have been, thus far, no *formalized curricula* for doctoral studies. The introduction of graduate colleges (*Graduiertenkolleg*) since the mid-1980's is a step in this direction; as a rule, however, a doctorate is pursued on an individual basis.

iv) The education system assumes that all students, at least those pursuing the first degree, are *full-time students*. Thus, there are no official course offerings for part-time students as there often are in other countries. The Correspondence University at Hagen is an exception.

v) Students are offered a comparatively *high degree of freedom* in higher education. Freedom here refers, first of all, to the principle of free choice of discipline and institution. It then refers to the study programmes which permit, within the limits of the study regulations, a free choice of classes and of concentrations within the discipline. Also, students are free to fulfill requirements at their individual paces and to supplement them with other courses as they wish. It has not proved possible to impose binding prescriptions as to the length of time in which the first degree must be completed.

In the following sections, the organization of studies will be described at three levels. To begin with, the general structure as regards courses of study and types of examination will be explained (5.1); secondly, the organizational pattern of study programmes (types of classes, self-study, timing) will be described with reference to examples (5.2); and finally, this presentation will be supplemented by a look at the actual behaviour of students and their judgments as to the reality of higher education (5.3).

5.1 Courses of Study and Types of Examinations

Subjects offered for a first degree are ordered, in principle, in the form of *courses of study* (*Studiengänge*) as is stipulated by the Framework Act. Courses of study are study programmes the structure and duration of which are governed by study and examination regulations. As a rule, study programmes aim at degrees qualifying for entry into professions. An up-to-date survey of the different programmes in the various disciplines, giving their structures, duration, and degree options is issued annually by the *Bund-Länder* Commission for Educational Planning as an aid for decision-making for new applicants for admission to higher education (see BLK/BA 1988 and, for the general structure of the study system, KMK 1982).

- The University Sector

Depending on the discipline and the professional goal of the student, the final examination at a university is one of three types: an academic examination, a state examination, or an ecclesiastical examination. To a great extent, the types of examinations have been determined historically.

State examinations are held in those fields from which civil servants are typically recruited (lawyers and teachers) or those fields for which the corresponding professions are subject to public control (medicine, pharmacy, food chemistry). State examinations are regulated by the *Bund* or the *Länder* and are conducted by state examination commissions in which professors also participate. In a similar way, the examinations terminating studies in theology are regulated by the churches.

Academic examinations include the Diplom and the Magister examinations. For these, the institutions lay down examination regulations which must be approved by the State, that is, by the responsible ministry of the respective *Land*. These examinations are conducted under the sole responsibility of the institutions. *Diplom examinations* originated as final examinations in technical universities. Study courses in engineering, the natural sciences, economics, and social sciences typically end in a Diplom examination. The *Magister examination* was re-introduced around 1960 with reference to the historical examination traditions of the universities, especially for the humanities and the social sciences. This examination presented an alternative to the State teacher's examination, ranked below the doctoral level. Today, either of these first examinations serves as a prerequisite for the doctorate.

The Diplom is generally an examination in one discipline. Magister examinations, on the other hand, generally relate to two major fields of study or to one major and to two minor fields. This is also usually the case for the teacher training courses. In addition to specific study subjects, these examinations also include courses on education and teaching methods related to the subjects studied.

In many disciplines, the student can choose between several programmes and degrees. Notwithstanding their characteristic predominance within the particular areas of study, the disciplinary borders separating the Magister and the Diplom programmes are fluid. There are also Diplom programmes in the languages and the arts, just as the natural science disciplines may be included in Magister programmes. In the social sciences, the two types of academic examinations are on about equal footing.

There are currently around 180 disciplines with Magister examinations and 93 Diplom courses, and there are 27 disciplines in which, depending on the university, either the Magister or the Diplom degree can be earned. The teacher's examination can be taken as a combination from around 50 fields. Such a large number of programmes or disciplines is not offered at all universities. For example, in the area of non-European languages and cultures, there are as many as 24 fields which can be studied in a Magister programme. These specialities, which range from African and Assyrian Studies via Hittite and Korean Studies, to Tibetan and Turkish Studies, can each be taken at only a few universities. Only one percent of the university students are enrolled in one of these 24 "exotic" fields. Similarly, there are specialized Diplom programmes in which only a few students are enrolled. The great majority of students are concentrated in far fewer than the 93 Diplom programmes and the 180 Magister disciplines.

The Diplom title indicates the disciplines in which the degree was earned. In engineering, the overall title is the Engineer Diploma (*Diplom-Ingenieur - Dipl.-Ing.*). In the natural, economic, and social sciences, the particular discipline is specified: e.g. Diplom-Mathematician, Diplom-Physicist, Diplom-Psychologist, and so on. The Magister title, in contrast, does not disclose the discipline in which it was earned: it is uniformly the *Magister Artium* (M.A.).

Diplom and Magister courses (like the teacher training courses) are, in general, divided into two stages of roughly four semesters each: the lower level, stage I (*Grundstudium*) and the advanced level, stage II (*Hauptstudium*). The fundamental knowledge of a discipline is acquired during the *Grundstudium*; it is generally concluded with a preliminary or "intermediate" examination (*Zwischenprüfung*). The *Hauptstudium* is meant to deepen the knowledge and to permit focussing on certain subfields. The concluding Diplom or Magister examination usually consists of a major paper or thesis written over the course of several months and written and oral examinations. The order in which these elements of the final examination are completed may vary from case to case. In general, student achievement is evaluated with grades ranging from 1 (= very good) to 4 (= sufficient).

According to the regulations set down in the Framework Act, the *standard period of study* at universities is to exceed four years only in specifically justified cases. Such a case is the study of medicine for which the standard period of six years is more or less accepted. In the Diplom and Magister programmes, the standard periods of study are, at present, set at four-and-a-half to five years. The actual time which students take to complete a first degree averages six and more years.

- The Fachhochschulen

Studies at *Fachhochschulen*, like those at universities, are organized in the form of courses of study leading regularly to the Diplom to which the parenthetical suffix (FH) is added in order to distinguish it from the Diplom awarded by the universities. This usage is required according to the terms of the 1985 revision of the Framework Act which abandoned the once intended "uniform" designation of Diplom.

The *Diplom (FH)* can be earned in 16 recognized disciplines that can be further subdivided into 40 specialties. Of these specialties, 32 fall under Engineering, quantitatively the most important area of studies offered by the *Fachhochschulen* (see Chapter 2.2). These 32 degree programmes in Engineering range from Architecture, Civil Engineering and Ceramic Technology, to Soil Conservation, Steel Construction, Textile Technology and Viniculture. In all of these programmes, the degree earned is the *Diplom-Ingenieur (FH)*, abbreviated *Dipl.-Ing. (FH)*.

The *Fachhochschule* education differs from that offered at a university in that it emphasizes practice and application. Practical work periods outside the institution, which form an integral part of the programmes, are accorded great importance. The programmes are shorter and more compactly organized than in the universities. Regular examinations play a more important role.

Studies at *Fachhochschulen* usually consist of six academic semesters and, depending on the regulations of the individual *Länder*, of one or two practical semesters. In Bavaria and in Baden-Württemberg, for example, two practical semesters are required. These practical semesters are completed as the third and the sixth of the total of eight semesters. Students who have completed a relevant occupational training programme (usually an apprenticeship) before beginning their higher education may be exempted from one practical semester.

As in the case of the universities, *Fachhochschule* education is divided into two stages: a *Grundstudium* (stage I) of two to three semesters concluded by a preliminary or "intermediate" examination (*Zwischenprüfung*) and a *Hauptstudium* (stage II) of three or four more semesters. The concluding Diplom examination includes written and oral tests and an applications-oriented paper written over the course of two or three months.

The *standard period of study* for degree programmes at *Fachhochschulen*, including practical semesters and examination periods, is three to four years. The actual time needed to complete the programmes is about four years. Thus, even at *Fachhochschulen*, there is a certain discrepancy between standard and actual periods of study, even though it is not as large as at universities.

- Continuing and Post-Graduate Studies

More than ten percent of all students (1986 = 148,000) have completed a first degree and are thus formally engaged in post-graduate studies. The motivation for such study, the forms it takes, and the degrees pursued by post-graduate students are unusually varied. According to a rough division, three types of post-graduate study may be distinguished:

Second Degree Studies: This designation refers to the study of a second discipline after the conclusion of a first degree with the goal of being qualified in two disciplines or programmes (for example, a psychology degree to supplement an education in economics; a Diplom in biology after completion of the State teacher's examination in which biology may have been one of the major subjects; a university Diplom in electrical engineering after completion of the Diplom (FH) in this or some other specialty). Depending on the type of the first course of study and its relation to the second one, previously completed coursework may be transfered to the new program. Around a half of the students who have already completed a first degree course enroll in a second one.

Special Studies: This category includes all kinds of continuing, additional, and supplementary studies that serve to deepen knowledge in one's academic field or to acquire academic or professional expertise. Around 340 such special course programmes are currently offered in higher education: sixty at art academies (e.g. music therapy and art pedagogy); fifty at *Fachhochschulen* (e.g. economics for engineers); forty at teacher training colleges (e.g. pedagogical training for music teachers and teachers of foreign students), the rest at universities and at comprehensive universities with subject matter ranging over all disciplines. These special courses of study, which usually last one to two years, are organized according to a variety of models (see Hertz 1987). The programmes are completed with a certificate or an additional academic degree, usually not a doctorate.

Doctoral Studies: As a matter of principle, a first academic degree, nowadays, is a necessary prerequisite for admission to doctoral programmes (*Promotion*). Another requirement is that the first degree has been completed with good grades (better than "sufficient"). The core of the doctorate is the doctoral thesis (*Dissertation*), which should represent an independent and original contribution to the academic discipline. After the dissertation has been accepted, the candidate must pass an oral doctoral examination (*Rigorosum*). The decisive role of the dissertation can be recognized in the fact that the degree is not conferred until after the dissertation has been printed, that is, until after the obligatory copies have been turned in for delivery to all university libraries in the country. The title conferred with the degree makes reference to the department or faculty in which the degree was earned (e.g. *Dr. phil*, *Dr. jur*, *Dr. rer. nat.*). The designation of the title varies considerably depending on the university and the department.

The amount of time needed to prepare a doctoral dissertation varies widely. Medical dissertations are frequently prepared while pursuing the first degree and are usually less extensive than other dissertations. Dissertations in the other fields take, on an average, an additional four or five years. Many "doctoral students" are not enrolled in a university because they are already working professionally inside or outside the university.

On the other hand, many students remain at their universities upon completion of a first degree without pursuing a formal academic goal (such as a second degree, a special course of study, or a doctorate). Such continuing studies serve to bridge the waiting time while job hunting (particularly in the cases of so-called "pro-forma" students).

In connection with the official attempts to shorten the periods of study in first degree programmes, the various forms of post-graduate studies have attracted new attention. The 1986 recommendations of the Science Council on the structure of university studies are a case in point. The Science Council suggested that first degree programmes be relieved of both research-related ambitions as well as of specialized professional knowledge and that both be shifted to post-graduate studies. This recommendation is in harmony with the concept of a more clear-cut division of responsibility and a gradation of study phases as has repeatedly and in various forms been brought into the discussion during the past two decades. A phasing in of this kind would permit the introduction of selection mechanisms into the system in so far as admission to graduate programmes would be made dependent on certain levels of academic achievement. Such concepts of division of labor, of gradation, and of selectivity remain controversial issues in higher education; in particular, they have found little support among students - not that students reject graduate studies as such - rather, they tend to fear that the first degree programme might become narrow and watered down.

The recommendations of the Science Council refer, on the one hand, to the systematic development of special course programmes that are not generally needed for a professional degree and that could, if offered as post-graduate programmes, react more flexibly to the changing requirements of the job markets.

On the other hand, the Council made reference to foreign models in its recommendation that systematically structured programmes for doctoral students be offered in graduate colleges (*Graduiertenkolleg*) or that post-graduate courses be organized at a supra-regional level. The courses would represent an alternative to the usual individual preparation of doctorates, tutored by professors with varying degrees of intensity. In graduate colleges, to be established in accordance with the existing research priorities at particular universities, students would be offered the possibility of preparing their doctorates within the framework of specific course programmes and of elaborating their dissertations in a broad research context.

This suggestion has been greeted with interest by the universities. More than a dozen graduate colleges in different disciplines and at different institutions have meanwhile been established. At this point, it is difficult to tell to what extent this new element in the German university system will come into use and will eventually become an equally important alternative to the individual preparation of a doctorate. The question is also one of financial resources. To this question, *Bund* and *Länder* have responded by declaring their general willingness to jointly finance graduate colleges for doctoral studies.

5.2 Patterns of Study Organization

The academic year at institutions of higher education is divided into a winter semester and a summer semester, intersected by periods without class meetings that are set aside for individual study. At universities, classes usually run for 28 weeks; at *Fachhochschulen*, 36 weeks (both semesters taken together).

Traditionally, the most important type of classes are lectures, in which systematic overviews of disciplines are offered. In addition, there are seminars, exercises, and laboratory courses. In these types of classes, particular topics are treated in discursive form, and students are often expected to write papers and to give class presentations. In classes of these types, students are introduced to the research and study methodologies of their disciplines.

Reforms "from the bottom up", that is, those of the higher education institutions themselves, have supplemented these traditional forms of learning with various other forms. These new forms were to some extent initiated by students or with the help of "didactic centers" established at various institutions. Almost everywhere there are *orientation periods* and *introductory classes* to help entering students adapt to the anonymous world of the large institutions of higher education. Some institutions offer *"bridge courses"* designed to help students without the requisite knowledge of particular disciplines to "catch up". The need for these courses arises in the cases of students who chose elective courses during their two final years at their *Gymnasien* which did not provide the necessary preparation for their academic disciplines. *Study groups* and *tutoring groups*, monitored by advanced students, have been introduced at some institutions with the aim of fostering personal and social communication. (A general system of tutors, as is common in Anglo-Saxon higher education, has no tradition in the German system). Some institutions offer *compact courses* before or after the semester periods of regular class activity. In such compact courses one topic is addressed during extended daily class meetings for a period of one or two weeks.

In *project studies* and *practice reconnaissances*, practical problems in the future professional fields of students are worked out. The sophisticated concept of the project course, which combines educational goals such as research-oriented learning, interdisciplinary references, co-operative learning, and problem-oriented practical topics, has developed out of numerous experiments. As a whole, project studies have remained a marginal element in higher education; nonetheless, their model and example have lasting effects, especially in the social sciences.

Practical periods or *practical semesters*, integral parts of the study programmes at *Fachhochschulen*, are also an option in some disciplines at some universities. Generally speaking, competing trends can be observed in university-type studies with the practical components of education sometimes on the rise and sometimes on the decline.

Like the seminars, the exercises, and the practical courses, these new forms of learning and coursework often presuppose close communication between teachers and students, on which the present conditions of "mass" higher education put severe limitations. In large academic departments, "seminars" and "exercises", with 100 to 200 participants, are no rarity. To some extent, the overcrowding has resulted in a sort of "internal *numerus clausus*", meaning that students cannot participate in the prescribed classes of their programmes, because the available places (e.g. in laboratories) are booked out.

Since the mid-1970's, reform endeavors "from the top down", that is, reforms initiated by the national co-ordinating committees in which the State and higher education participate, have resulted in a more standardized and regimented process of education. This result has, nonetheless, not made it possible to reduce the standard period of study for a first degree programme at universities to the four years advocated in the Framework Act. The reality of higher education still departs from this legal desideratum in two important respects: first, many degree courses have study and examination regulations that require a longer duration; secondly, the actual duration of studies in nearly all degree programmes is longer than what the regulations prescribe, with the exception of the medical programmes which require a longer period of study in the first place.

In this context, the "feasibility" of studying as prescribed by study regulations has become an issue. The question here is whether or not the average student, in terms of intelligence and interest, can complete a degree course in the time prescribed. This question was taken up by the Standing Committee for Study Reform, a committee appointed by the *Länder* and the higher education institutions, that was responsible for the co-ordination of study reforms at the national level from 1978 to 1985. In 1982, the Committee devoted a basic document to "the duration and feasibility of higher education programmes" (*Dauer des Studiums und Studierbarkeit des Lehrangebots*; see KMK 1982). Starting from the time-budget of students, the Committee developed a model of the schedule and the demands on students that an academic programme could reasonably make. The model was meant to serve as a guideline for designing study regulations as well as for planning the study programmes within particular departments at the local level.

Table 10

Time Model for Studies at Universities and at Fachhochschulen
(according to the Guidelines of the Standing Committee for Study Reform)

Time Model	Universities	Fachhochschulen
Time Frame of a Study Year		
	Weeks (W) x Hours (Hrs.)	*Weeks (W) x Hours (Hrs.)*
Period of Course Activity (Winter/Summer Semester)	28 W x 45 Hrs. = 1,260 Hrs.	36 W x 45 Hrs. = 1,680 Hrs.
Period without Course Activity (Semester Breaks)	18 W x 45 Hrs. = 810 Hrs.	10 W x 45 Hrs. = 450 Hrs.
Total	46 W x 45 Hrs. = 2,070 Hrs.	46 W x 45 Hrs. = 2,070 Hrs.
(Holidays, Sickness etc.)	(6 Weeks)	(6 Weeks)
Time Use of a Study Year		
In Class Time		
- Subject Studies	28 W x 20 Hrs. = 560 Hrs.	36 W x 24 Hrs. = 864 Hrs.
- General Studies	28 W x 2 Hrs. = 56 Hrs.	36 W x 2 Hrs. = 72 Hrs.
Classes total	28 W x 22 Hrs. = 616 Hrs.	36 W x 26 Hrs. = 936 Hrs.
Out-of-Class Time		
- Preparation/Review of Classes	616 Hrs. x 2 Hrs. = 1,232 Hrs.	936 Hrs. x 0.97 Hrs.= 912 Hrs.
- Special Assignments (Papers, Preparation of Examinations etc.)	222 Hrs.	222 Hrs.
Total	2,070 Hrs.	2,070 Hrs.
Time Planning for a Degreee Course conforming to the Standard Period of Study		
	Semester Hours per Week (SHW)	*Semester Hours per Week (SHW)*
Amount of Classwork related to Subject Studies in a Degree Course	8 Semester x 20 SHW = 160 SHW (Practical Periods/Periods for Thesis to be deducted)	6 Semester x 24 SHW = 144 SHW (plus 1 or 2 Practical Semesters)

Source: Standing Committee for Study Reform; see KMK (1982).

On the basis of this *time model*, the temporal norms for the organization of study courses can be illustrated (see Table 10). Aiming at realistic planning, the model assumes that students can normally devote 45 hours per week to studying in the narrow sense, i.e. not counting time spent commuting, organizing, etc.

This work load is assumed for the semester as well as for the periods without course activity; six weeks for vacations/illness are deducted. The result is an educational work year of 2,070 hours (46 weeks x 45 hours).

In filling out this time frame, the Committee took into account the fact that beyond class attendance, independent, individual studies are constitutive of a higher education, especially in the university sector. A distinction between in-class and out-of-class study time is made. The latter includes the time needed to prepare and to review classes as well as the time needed for special assignments (e.g. elaboration of papers and presentations and preparation for examinations). The global assumption is that one class hour at a university requires two hours of preparation or review and that one hour at a *Fachhochschule* requires one hour of preparation. For special assignments, a period of around five weeks (220 hours) over the whole year is assumed.

According to this model, a university student is employed to full capacity with 22 semester hours per week. The *Fachhochschule* student has a full complement with 26 hours. In programmes with types of classes requiring less preparation (e.g. laboratory courses), the in-class time can exceed these values. In programmes in which more time for independent study is required (e.g. three hours per class hour), the in-class time must be reduced accordingly. Furthermore, the model assumes that ninety percent of the classes of a student are related to the subject of his particular programme (compulsory, optional, or compulsory-optional classes). Ten percent are chosen because of a wider interest according to individual choice.

According to this time-use pattern, a university education conforming to the four-year standard period of study would amount to 160 semester hours in subject-related studies. This amount would need to be reduced to the extent that the M.A. or Diplom thesis is to be prepared within the standard period or that practical periods are integrated into it. In *Fachhochschule* programmes, six academic semesters would amount altogether to 144 semester hours of subject-related studies. These values are to be understood as the maximum feasible values for degree courses to be completed in the standard periods of study.

Thinking of degree programmes in such an objectified framework with a calculated schedule remains very unusual in German higher education, especially within the universities. According to the priorities set by the above-mentioned Standing Committee, national study reform commissions were formed, to begin with, for fifteen disciplines. These commissions have worked out recommendations for the goals, contents, structure, and duration of programmes within these disciplines. The resistant way German higher education reacted to the stipulated four-year standard period of study is illustrated by the results of the study reform commissions which leaned on the time model sketched above. In the university sector, a standard period of study totalling eight semesters (including the examination periods) was suggested for only one discipline, namely economics. For the other fourteen disciplines under study, standard periods of nine semesters (four disciplines), ten semesters (nine disciplines), or even twelve semesters (in the case of architecture) were recommended. For most of these disciplines, to be sure, a standard time of eight academic semesters of coursework is respected; however, the total duration of programmes was extended by

Table 11

Structure and Duration of Study Programmes according to the Recommendations of 15 Study Reform Commissions and the Actual Duration of Studies

Organization and Duration of Programmes in Semesters (or Semester Hours per Week SHW)						Actual Duration, 1986	
Study Reform Commissions	Coursework No. of Semesters (No. of SHW)	Time for Thesis and Examinations	Standard Period of Study	Practical Period	Total Duration	a) Duration in the Discipline	b)Total Duration in H.E.
1. Dentistry	10	1 (-)	11	-	11	11.4	13.6
2. Chemistry							
a) Uni	8 (240)	2 (6 months)	10	-	10	13.0	14.8
b) FH	7 (200)	(3 months)	7	1	8	8.8	9.0
3. Economics							
a) Uni	8 (140)	(4 months)	8	-	8	11.2	12.2
b) FH	6 (120)	(3 months)	6	1	7	7.4	8.2
4. Architecture							
a) Uni	10 (212)	1 (10-20 we.)	11	1	12	13.4	15.0
b) FH	8 (192)	1 (3 months)	9	1	10	9.6	10.6
5. Regional Planning	8 (168)	1 (4-6 months)	9	1	10	..	..
6. Civil Engin.[2]							
a) Uni	9 (190)	1 (2 months)	10	1	10	12.8	14.4
b) FH	6 (168)	1 (6-8 weeks)	7	2	8 or 9	8.8	9.6
7. Language/Lit.	8 (160)	1 (6 months)	9	-	9	12.0 - 13.4	14.2 - 15.2
8. Education/ Social Work[2]							
a) Uni	8 (160)	1 (6 months)	9	1	10	11.4	14.6
b) FH	6 (116)	(3 months)	6	1	7	7.8	8.6
9. Biology	8 (200-220)	2 (9 months)	10	-	10	12.8	14.0
10. Psychology	8 (156)	1 (6 months)	9	1	10	12.6	16.2
11. Political Science/ Sociology[2]							
a) Pol. Science	8 (160)	1 (6 month)	9	-	9	12.6	15.4
b) Sociology	8 (160)	1 (6 months)	9	-	9	12.6	15.4
12. History[2]	8 (160)	1 (6 months)	9	-	9	13.0	14.8
13. Geography[2]	8 (160)	1 (6 months)	9	-	9	13.2	15.0
14. Mechanical Engineering[2]							
a) Uni	8 (160/174)	1 (3 months)	9	-	9	12.8	13.8
b) FH	6 (170)	(3 months)	6	1	7	8.4	9.2
15. Electrical Engin.[2]							
a) Uni	8 (175)	1 (6 months)	9	1	10	12.8	13.4
b) FH	6 (150-170)	(3 months)	6	2	8	8.2	9.0

1) Excluding practical periods before entering h.e. and excluding practical training periods after obtaining the first degree.
2) Draft of recommendation.

Source: Standing Commitee for Study Reform; see KMK (1985), p. 41.

a) subject-rel. sem. only
b) all h.e. semesters, incl. exam periods
Source: BMBW (1988), p. 218.

adding time for examination papers and/or practical periods (see Table 11).

With reference to some extent to these results, the Science Council (1986) has once again strongly recommended the limitation of the requirements in first degree courses and the reduction of the standards of M.A. and Diplom theses to those prevailing in earlier times. The Council underlined its plea with the formula, "4 plus", as the directive for the planning of course requirements.

This formula means: four years plus a maximum of three months for examinations. The universities have responded with the argument that for many degree programmes the currently valid standard periods of nine semesters surpass only slightly the formula of "4 plus". Therefore, the institutions saw no need to discuss anew the standard times as set by study regulations. Rather, they argued that the considerable discrepancy between the current standard periods and the actual study periods of students should be addressed (WRK 1988b, p. 54 f.).

There are a variety of reasons for this disparity: the lasting traditions of German higher education; the increase in material and the temporally inefficient study and examination patterns; the present overcrowding, and the associated "internal *numerus clausus*"; student attitudes toward education; their individual learning patterns; failure on examinations (by which a semester is often lost); the general situation of student life, the job market, and last but not least, the financial situation of the typical student (see HIS 1988). Over half the students work during the semester breaks or even during the semester. This factor alone explains why the time budgets of students must often deviate from the schedule assumed in the time model of the Standing Committee.

5.3 The Student Perspective on the Organization of Studies

To supplement the somewhat formal view of study programmes, examinations, and organizational patterns of academic studies, we shall outline the student view on the organization of studies and teaching. This outline is based on data from representative student surveys about the situation of higher education during the 1980's (see Peisert/Bargel/Framhein 1988).

- The General Orientation of Higher Education

Students enter higher education with wide-ranging expectations. Many students think that specialized academic training in their chosen disciplines is emphasized too one-sidedly. Rather, the majority of students, at universities and at *Fachhochschulen* alike, would prefer a tripartite orientation of studies and teaching according to which academic training is supplemented by equivalent references to professional development and general education.

Although there are important differences among the disciplines with regard to study climate, the structure of demands, and the intensity of the work expected of students, it is generally true that students are by and large satisfied with the academic training in their respective disciplines while feeling that wider-ranging educational goals are not given due attention: Interdisciplinary aspects, communicative learning (e.g. class-discussions and co-operative work with other students), and the encouragement of critical and autonomous learning attitudes (including criticism of theories and doctrines and the development of individual concentrations within the discipline) are generally considered as being neglected.

- Research Participation and Orientation with Regard to Practice

The different structures of education at the universities and the *Fachhochschulen* are reflected in the experiences of students. Twenty percent of the advanced students at universities have personally participated in research projects; whereas, only a very few *Fachhochschule* students have done so. On the other hand, *Fachhochschule* students much more frequently express satisfaction with the occupational and practical training which they have received than do university students (one-third vs. less than one-tenth). But even at *Fachhochschulen*, with their special focus on application-oriented programmes, students still feel that much remains to be done in this respect.

Both research and practice are extremely attractive in the eyes of students at both types of institutions. They promise the student an opportunity for personal and intellectual as well as professional development. Generally speaking, even university students seek contact with the professional world; almost nobody sees advantages in being confined to the academic ivory tower.

- Freedom and Regulation

Despite the general introduction of courses of study governed by study regulations in all branches of higher education, the contrasting institutional traditions, "academic freedom" at the universities and "vocational schooling" at the *Fachhochschule*, live on to a certain extent. Almost all *Fachhochschule* students describe their education as tightly governed by curricula and study regulations, while university students report more frequently that they have some leeway in their study programmes.

The situation, however, is extremely different in the various disciplines. The continuum stretches from the "soft" disciplines in the humanities and the social sciences, in which students are free to plan a great deal of their programmes individually, over the more closely regulated disciplines (like law and economics), to the programmes which are almost completely regulated by the study regulations. The most minutely structured discipline is medicine. Here students describe their programme as being even more rigidly prescribed than is typically the case at the *Fachhochschule*.

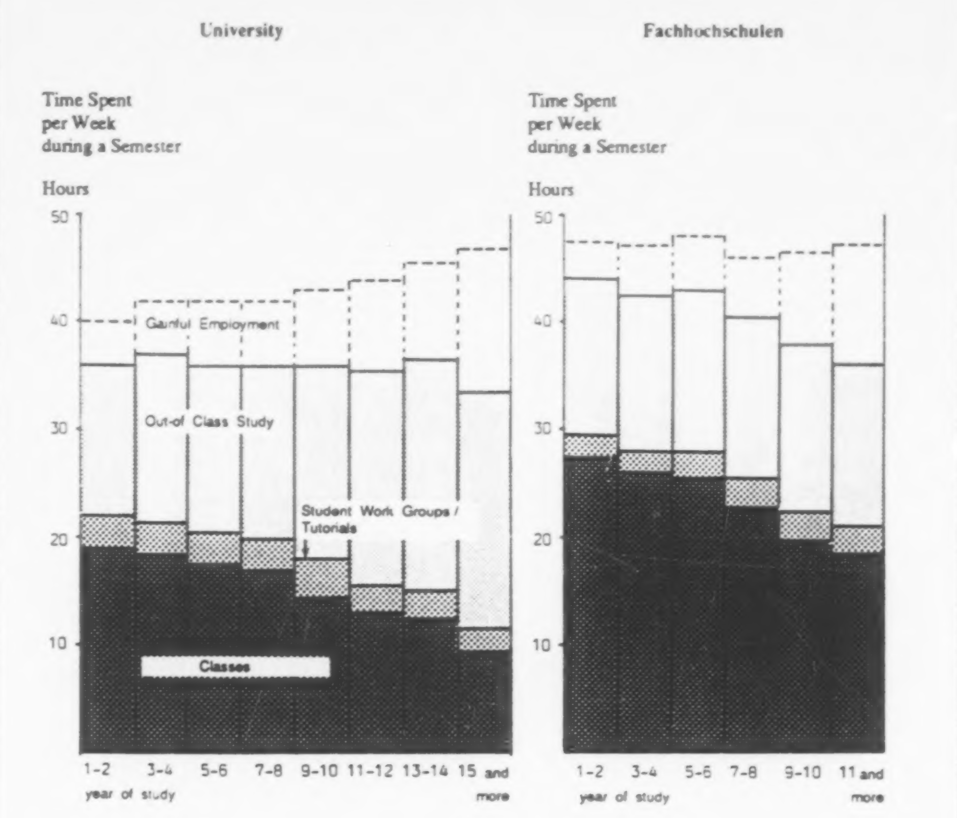
- Student Time Budgets

Investigations into the student time budget, like time budget surveys in general, are fraught with a high degree of uncertainty. Nonetheless, the evidence indicates that the time students spend pursuing their education varies widely, especially at universities, from the time budget that is officially assumed for completing a degree course in the standard period of study. The Standing Committee (see above) assumed for example that students put in a 45-hour week; but university students themselves report an average study time of 36 hours per semester week, and *Fachhochschule* students report an average of 43 hours per week (see Figure 6). During the semester breaks, when many students seek gainful employment, the amount of time devoted to study is bound to be lower than during the period of class activity.

As with regard to the degree of regulation, there are vast differences among the disciplines with regard to the study-related time budgets (classes and independent study) of students. At universities, the time put in for studying ranges from around thirty hours per week in the social sciences to more than forty hours in medicine; at *Fachhochschulen*, it ranges from thirty hours per week in social work to forty-six hours in engineering. However, the time invested in study activities varies not only among the disciplines but also among students within these disciplines. This variance is much larger than would be expected from individual differences in study habits or commitment to learning. This evidence suggests that unofficial patterns of part-time studies have come into being which diverge more or less from the official concept of full-time studies.

Figure 6

Student Time Budget for a Semester
(by Year of Study)



Source: Peisert / Bargel / Framhein (1988), p. 134.

- Student Attitudes towards the Duration of Studies

Although the standard period of study at universities is set at four to five years (six in medicine), the average amount of time students actually spend in degree programmes is six years; and the total average length of a university education, from initial enrollment to completion of final examinations (and, if applicable, including the time spent in another programme), is more than seven years. Many students plan for this extension of study time from the very start.

Student opinion as to the value of a quick and direct route through higher education is very much divided. Students generally acknowledge, to be sure, that such a route improves chances on the job market; but about a half of the students polled see no advantage in a speedy university education for their individual growth. Many see their university years as an open-ended, loosely defined period for work, education and personal development, offering, in addition and in connection with studying, manifold opportunities for cultural, political, and interpersonal activities. A short, pragmatic route to the university degree would unduly curtail such opportunities. This attitude is particularly widespread in the humanities and the social sciences.

Even in the more tightly regulated programmes with a greater emphasis on in-class work and a high amount of time investment in general, the students do not complete their first degrees with greater rapidity. As a rule, the requirements tend to increase with the amount of regulation, so that the intention to shorten the duration of studies is counteracted. Observers of engineering programmes, for example, have long contended that these programmes, with their tightly structured performance standards and rigidly regulated curricula, cannot possibly be completed within the official standard time (see e.g. Wagemann 1987).

The situation may be usefully oversimplified as follows: In some disciplines, *students do not want* to complete their programmes rapidly (humanities and social science), and in other disciplines (natural sciences and engineering), *curricula do not permit* a rapid completion. A comparatively short duration of study, therefore, seems to be a characteristic of those fields in which intermediate standards of structure and requirements meet a general student interest in a quick degree (as in law and economics, in which the interest of students in income and in status is comparatively strong).

This brief sketch was meant to outline the tension between the formal-legal and the administrative frameworks of the organization of studies and the expectations, experiences, and ideas of the students themselves. Both perspectives exhibit variations and contradictions leading to lively discussions, not to mention confrontations as well as conflicts. The continuing debate contributes to constant changes in the everyday conditions of higher education which are, depending upon one's own perspective, sometimes regarded as a positive and sometimes as a negative development.

6. The Students

6.1 Social Profile: Age, Percentage of Women, and Social Background

The social profile of the students enrolled in the universities and *Fachhochschulen* exhibits typical variations. These can be explained from the different educational traditions of the various institutions, their ranges of disciplines, and their routes of access. Universities, with their broad spectrum of academic disciplines, are primarily institutions in which students pursue their first professional education. *Fachhochschulen* concentrate on engineering, on business, and on social work. In conformity with their institutional traditions, some of their students enroll in pursuit of further qualifications after having first completed an occupational training programme (usually an apprenticeship) in a craft, in an industry, or in commerce. These differences are borne out in the age, percentage of women, and social origins of the students.

There are different routes of access to the *Fachhochschulen*. In parallel with the route leading via technical secondary schooling and the *Fachhochschulreife* (with or without an apprenticeship), *Fachhochschule* education has become highly attractive for students and graduates of *Gymnasien*. In 1975, fewer than one-fifth of the entering students at *Fachhochschulen* had attended a *Gymnasium*; in 1987, about half of them had done so (supplemented by an apprenticeship or internship). As it is also true that many *Gymnasium* students who enter a university place a great value on practical occupational experience and tend increasingly to seek a dual qualification (apprenticeship *and* university education), a certain rapprochement, in this respect, in the recruitment patterns of universities and *Fachhochschulen* can be observed.

- Age

When students proceed according to the typical plan, the *Abitur* is completed after thirteen years of schooling at the age of 19 and the *Fachhochschulreife*, after twelve years of schooling at the age of 18. However, the average age of new entrants is currently 21.3 years at universities and even 22.4 years at *Fachhochschulen*. That *Fachhochschule* students are, nonetheless, a year younger, on the average, than university students is a result of the shorter duration of study at *Fachhochschulen* (see Table 12).

Men tend to be older than women by half a year to one year when they begin their higher education. Around fifty percent of the men complete military service (fifteen months) or alternative service (eighteen months) before enrolling, a situation which postpones entry into higher education. However, the most important factor contributing to the relatively late start in higher education is the time spent working or pursuing occupational training. In 1987, about one-half of all entering students at *Fachhochschulen* and one fifth at universities had already completed an occupational training programme. In some cases, waiting times for study places are spent in this fashion. Also, the uncertain job market has motivated some students to complete a shorter training programme before beginning their higher education. Some decide only after several years of work or family/child care time to pursue higher education. Eight percent of the new entrants in universities and even sixteen percent at *Fachhochschulen* begin higher education at the age of 25 years or older.

The relatively late start and the long period of study combine to give a high average age to university graduates: 28.4 years (*Fachhochschulen*: 26.7). If one considers the age pyramid of students as a whole, 200,000 (= 15 percent) are over 30 years of age.

Table 12

Age of German New Entrants by Type of Institution and by Sex: 1987

Age of New Entrants	Universities 1)			Fachhochschulen		
	Total (123,000) %	Male (69,200) %	Female (53,700) %	Total (55,800) %	Male (37,100) %	Female (18,700) %
up to 20	47	35	61	27	18	46
21 and 22	34	43	22	35	38	29
23 and 24	11	13	8	22	26	13
25 and older	8	8	9	16	18	12
Total	100	100	100	100	100	100
Average Age in Years						
New Entrants	21.3	21.6	21.0	22.4	22.7	21.6
Students	25.6	25.9	25.2	24.6	25.0	23.7
Graduates (1986)	28.4	..	..	26.7	..	..

1) Including Gesamthochschulen, Teacher Training Colleges, Theol. Seminaries, Art Academies. Graduates refer to University Graduates only.

Source: BMBW (1988): Grund- und Strukturdaten 1988/89, p. 162 and 220.

In educational policy discussions in the Federal Republic of Germany, the advanced age of graduates, in comparison to that in other countries, is regarded just as critically as the long duration of studies. The resultant "aging" or "delayed career development" is considered a problem. It is worth pointing out, however, that the high average age results not only from the overly long period of study of the "normal" student; it also results from non-traditional study patterns such as part-time study and "adult education", forms that are often portrayed separately in the higher education statistics of other countries.

- Percentage of Women

Since the beginning of the 1960's, the participation of women in higher education has increased significantly. This trend is consistent with the explicit goal of equal educational opportunities for all social groups. In 1960, only 28 percent of all university students were female. This percentage rose, especially during the 1970's, and has remained nearly constant, at about forty percent, since 1980 (see BMBW 1988, p. 135). Clear indications of sex-related handicaps on the higher rungs of the academic career ladder still remain. Only 25 percent of the doctoral degrees are completed by women, and when it comes to the *Habilitation* the proportion is 8 women to 92 men.

At the *Fachhochschulen*, the percentage of women students rose from about twenty percent to around thirty percent during the 1970's and has also remained nearly constant at this level since 1980. The lower percentage of women at the *Fachhochschulen* illustrates the predominance of traditionally "male" disciplines, especially engineering, in this sector. In a similar vein, the fifty-percent share of women students in art and music colleges ex-

Table 13

Distribution of Students by Type of Institution, by Area of Study and by Sex: 1987

Area of Study	Universities1)			Fachhochschulen		
	Student Total (1,082,164) %	Male (641,696) %	Female (440,468) %	Student Total (328,625) %	Male (232,798) %	Female (95,827) %
Language/Humanities/ Sports/ Art	32	21	47	6	3	13
Law/Economics/ Social Sciences	25	27	22	37	28	57
Mathematics/Natural Sciences	19	22	15	5	6	4
Medicine	10	9	10	-	-	-
Engineering Sciences	12	19	4	49	60	20
Agriculture/Forestry/ Food Science	2	2	3	3	2	5
Total	100	100	100	100	100	100
thereof in Teacher Training Courses	10	7	16	-	-	-

1) Including Gesamthochschulen, Teacher Training Colleges, Theol. Seminaries and Art Academies.

Source: Statistisches Bundesamt (1988): Studenten an Hochschulen WS 1987/88 (Vorbericht), p. 35.

presses the special "feminine" interest in artistic fields.

Important sex-related differences continue to prevail in the choice of study fields. This phenomenon can already be observed in the interests and course selections of girls in secondary schools. Women show a marked preference for disciplines in the area of languages, humanities, and art, including psychology and education. Almost half of the female students choose their major fields of study in one of these areas. The fields chosen by men are more evenly distributed across the full range of university disciplines. They choose natural science and engineering fields much more frequently than do women (see Table 13).

Sex-related preferences are well illustrated by the percentage of women students in the particular fields. Taking all types of higher education institutions together, women make up 38 percent of the total number of students. Using this percentage as a norm, women are highly overrepresented in the following large fields: English language and literature (73 %), German (67 %), Education (65 %), Psychology (61 %) and Biology (53 %). They are represented more or less normally in Medicine (43 %), Law (39 %) and Architecture (36 %). And they are clearly underrepresented (with a tendency towards zero) in fields such as Civil Engineering (11 %), Industrial Engineering and Physics (both 10 %), and Electrical and Mechanical Engineering (both 3 %).

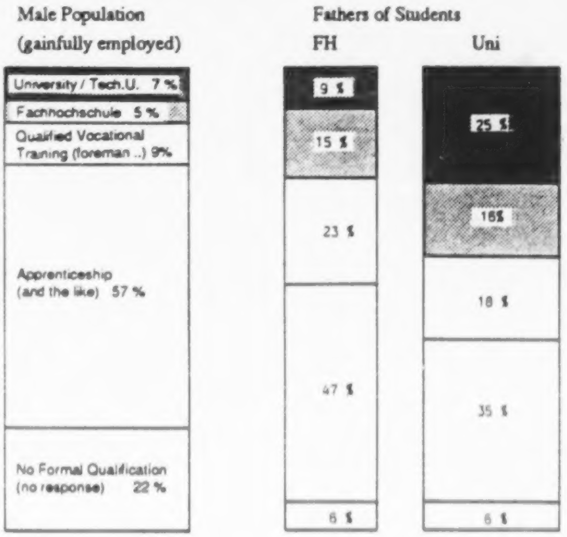
- Social Background

Other than the case of women, the goal of achieving equal educational opportunities was directed at those segments of the population

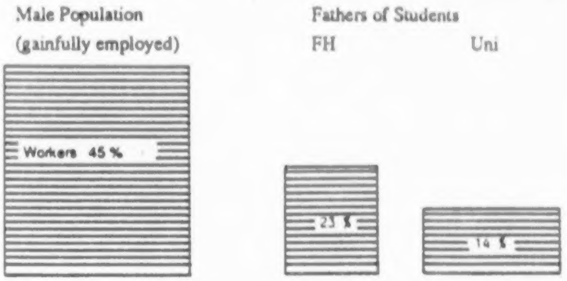
Figure 7

Social Background of Students: 1987

Educational Qualifications of the gainfully employed in the male population and of students' fathers



Working-Class Persons in the gainfully employed male population and among students' fathers



Source: Population, gainfully employed: BMBW (1988): Grund- und Strukturdaten 1988/89, p. 284 and 288 f.; Students: Konstanzer Projekt Studiensituation WS 1986/87, Qu. 124, 125; see Bargel et al. (1989).

which until then had considered higher education to be something very remote. Two indicators are often used to describe the social composition of the students: the proportion of them whose parents have had higher education and the proportion of them from working-class families. The first indicator relates to the highest educational, the other to the lowest occupational status of the parents.

Since the early 1960's, the proportion of working-class children enrolled in universities has tripled from five to fifteen percent, while the proportion of students whose fathers were university graduates has dropped from 36 to 25 percent. If a broad definition of higher education is applied, one that includes graduates of the *Fachhochschulen* and the like, around forty percent of the fathers of today's university students completed higher education.

Despite these developments, major differences still exist between the educational and occupational structures of the population as a whole and the social composition of students (see Figure 7). Students enrolled at *Fachhochschulen* fall in the middle. They tend to be "educational climbers" (only 24 percent of their fathers have completed higher education in the broad sense), and they are much more likely to come from working-class families than are university students.

As was the case for women, increases in the participation of working-class students in higher education tailed off toward the end of the 1970's. The proportion which they represent in the total student population has since remained nearly steady, even showing a slight downward trend. At the same time, students from the better educated classes are again more strongly represented. This may be due to the present uncertainties of higher education: admissions restrictions, financial aid cuts, and uncertain job prospects. Several empirical studies have documented that the "new" student groups have tended to react with greater sensitivity to these factors than those from the "traditional" educated classes.

6.2 Student Life: Finances, Living Arrangements, and Student Associations

An important source of information about the social conditions of student life, including the financial situation of students, their sources of income and expenditures, and their living arrangements and eating habits are the regular "Social Surveys". These are large-scale representative student surveys which have been taken by the German Student Welfare Service about every three years since 1951, a pioneering effort in long-term social reporting. The social surveys provide the argumentative basis for the socio-political concerns of students vis-à-vis the State and the public at large. The German Student Welfare Service (*Deutsches Studentenwerk e.V.*) in Bonn is the umbrella organization for fifty local student welfare offices associated with the higher education institutions in their respective regions. They are entrusted with the social welfare of students and operate exclusively on a non-profit basis. Their main responsibilities are running student residences and cafeterias/restaurants (*Mensa*), as well as administering the public financial assistance scheme (BAföG). In addition, the offices provide a number of social and cultural services which vary from place to place; for example, psychotherapeutic counseling, job services, kindergartens, and travel agencies. The welfare offices are subsidized by the government (especially their student restaurant services). Every student is obliged to pay the service a semester fee of around 35 DM.

- Finances

Tuition fees were generally abolished at German higher education institutions as of the early 1970's. In this way, all students enjoy indirectly the benefits of a type of public financing that is not usual in all countries.

The cost of financing a higher education thus refers primarily to the living expenses of the individual student. According to the 12. Social Survey, the regular monthly expenses of a typical student averaged 951 DM in 1988 (see Table 14). In the context of this Survey, a "typical student" (about sixty percent of the total number of students) is unmarried, pursuing a first degree programme, and does not live in the parental home. Students living at home with their parents have lower expenses; married students and older students in postgraduate programmes have higher expenses.

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Table 14

Regular Monthly Expenses of Typical Students1): 1988

Type of Expense	DM	%
Rent (incl. operating costs)	302	32
Food	220	23
Clothes/Laundry	62	6
Transportation (incl. car)	100	10
Study Materials	55	6
Hygiene	26	3
Other2)	186	20
Total	951	100

1) "Typical Student": Single, not living with parents, pursuing first degree.
2) Expenses for Hobby, Sports, Personal Insurance, Telephone etc.

Source: 12. Sozialerhebung; cf. Schnitzer / Isserstedt / Leszczensky (1989), p. 250.

The three largest items of monthly expenditure of the typical student are rent, food, and transportation (not counting the category "other" composed of various types of expenses). Standing at almost one-third, rent is the highest single expense. The rent costs of students have risen by 25 percent since 1982, while their food expenditures rose only by four percent during this period. The transportation costs include expenditures for cars; every second typical student has a car. Car-owners have monthly transportation expenses of 160 DM; the transportation costs of other students averaged 49 DM.

The cost of a student's living expenses is primarily the responsibility of the parents (or spouse, if applicable). If the income of parents falls below a level at which they can no longer be expected to meet this responsibility, the student is entitled to public assistance. This individual financial support, regulated by the Federal Training Assistance Act (*Bundesausbildungsförderungsgesetz* - BAföG), is thus of a subsidiary nature and is only provided when other means are lacking: that is, when the parents or the spouse cannot defray the costs and the student has no means of his own. As of the fifth semester, this financial assistance is contingent on academic performance. The length of time a student is entitled to receive BAföG is generally set at the standard period of study of the particular study programme plus one or two additional semesters. Students who have not completed their degree at this point, a common occurrence these days, must usually seek employment to meet their living expenses.

The income of the typical student is a mix of several financial sources. Only 28 percent of all students have only one source of income. Often, the financial support provided by parents or by BAföG is not sufficient to cover all expenses. Only sixteen percent of all students receive more than 600 DM per month from their parents; only ten percent receive more than 600 DM as a BAföG payment (in 1988, the maximum BAföG payment was 823 DM per month). The most important additional sources of income are jobs or savings from activities before entering higher education (e.g. vocational training, employment, or military service). Altogether, parental support and work

Table 15

Financial Sources for Student Living Expenses: 1982 and 1988

Financial Source	Percentage of Students Using this Source		Contribution of Source to the Student Income	
	1982 %	1988 %	1982 %	1988 %
Parents	65	69	43(c)	45(c)
Employment	50	62	23	28
BAföG Payments	37	23	20	12
Personal Savings	(a)	20	(d)	(d)
Relatives/Friends	10	13	(d)	(d)
Spouse/Partner	8	6	(d)	(d)
Orphan Rent	5	4	(d)	(d)
Talent Scholarship	2	3	(d)	(d)
Loan (not BAföG)	(a)	2	(d)	(d)
Other	9	7	14	15
Total	186(b)	217(b)	100	100

(a) Not asked.
(b) More than 100 percent, since two thirds make use of more than one source.
(c) Including non-monetary receipts (e.g. housing at home, clothes etc.).
(d) Included in category "Other".

Source: 12. Sozialerhebung; cf. Schnitzer / Isserstedt / Leszczensky (1989), p. 183, 185 f.

are the two most important sources of income, followed by BAföG. Often too, savings play a role; however, they constitute only a small share of the funds needed to meet living expenses (see Table 15).

The older the student, the more important becomes employment as a means of financial support. With the age, the standard of living rises, and so does the amount of income one needs; at the same time, parental support may wane or the BAföG payments may stop if the student exceeds the set time for the completion of studies. Students at *Fachhochschulen* finance their education with BAföG much more frequently than do university students, which corresponds to the different social compositions of the students at the two types of institutions (32 % of *Fachhochschule* students and 20 % of university students receive BAföG).

The relative importance of the different sources of student income changed markedly during the 1980's. The percentage of students receiving BAföG has dropped; in turn, the percentage of students who have jobs has increased. This is a long-term trend. While a job during the semester break was always the rule for about half of the students, the percentage of students who work *during* the semester has increased from about 25 percent (1967) to more than 50 percent (1988; see Schnitzer et al. 1989, p. 265). However, the degree to which students work during the semester varies widely; frequently it is only a few hours per week. Tutorial and student assistant positions at the institution itself are considered particularly attractive. Around one fifth of all students have such study-related jobs; the student demand for such positions is much greater than the supply.

The drop in BAföG-assistance (in 1980, 341,000 students received such funding; in 1986, only 276,00; see *Wissenschaftsrat* 1988, p. 117) is related to changes in the assistance scheme brought about in the early 1980's by public budget cuts. From 1971 onwards, BAföG was at first made available as grants (non-repayable); later it was changed into a combination of grants and loans. Since 1983, BAföG payments have been entirely converted to interest-free loans, repayable within 20 years (starting five years after graduation). If a student finishes especially rapidly or with particularly good grades, a part of the loan is waived.

One cannot easily assess the extent to which the shift from grants to loans has deterred young people of the lower economic strata from pursuing higher education. It is equally difficult to determine the extent to which the uncertain job market or rising family income levels have contributed to the drop in BAföG recipients. In any case, the advocated social opening of higher education to non-traditional student groups has come to a standstill during the past years and may even have backslid. In this connection, the reforms of the training assistance scheme which are planned for introduction in 1990 are intended to promote greater social justice. They will no doubt lead to the re-introduction of a mixed form of grants and loans.

- Living Arrangements

A problem which has grown along with the rapid rise in enrollments is the provision of student housing at the local level: Every fall at the beginning of the academic year, the "student housing crisis" makes headlines. The student welfare services do offer help to students in search of housing, but in the Federal Republic, it is finally up to the individual students to find financially acceptable dwellings in the vicinity of their places of study.

Accommodation in student residence halls is available for about one student in ten. Since the mid-1960's, the number of rooms available has about kept pace with the rise in enrollments. At that time, 33,000 students could be accommodated; today there are rooms available for 130,000.

The living arrangements for the remaining ninety percent of the students have undergone major modifications. Well into the 1960's, most students sublet rooms from private parties or lived with their parents.

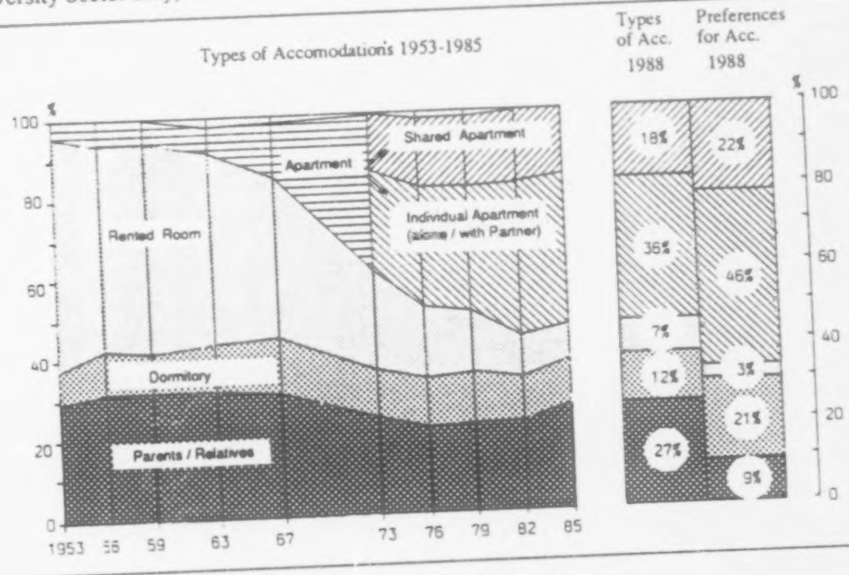
The subletting of rooms, which used to be a common practice, has become less so. In 1953, 58 percent of all students lived in such rented rooms; in 1963, the percentage had dropped to 48 percent; in 1973, to 25 percent, and in 1988, it was down to a mere seven percent. Instead, the renting of apartments now constitutes the dominant living arrangement. In most cases, students rent an appartment and live alone, as a couple, or in a small group. A good half of all students are now accommodated in this manner (see Figure 8).

The practice of living at home with one's parents has also declined over the long term: from 33 percent in the early 1960's, to 22 percent in the early 1980's. Since then, the percentage of students living "at home" has again increased (to 27 percent in 1988), a trend which may well be due to the more difficult situation of financing a higher education. Students at *Fachhochschulen* are more likely to live with their parents (39 percent) than are university students. They have a greater opportunity to do so, since the regional locations of *Fachhochschulen* are spread more evenly across the country.

The living arrangements of students are clearly determined by their age. At ages 20 and 21, almost half of the students still live with their parents, whereas, of the 26-and 27-year-olds,

Figure 8

Types of and Preferences for Student Accommodations: 1953 - 1988 (University Sector only)



Source: 12. Sozialerhebung: Schnitzer / Isserstedt / Leszczensky (1989), p. 342, 364.

only 22 percent live at home. In turn, the percentage of students living in apartments (alone or shared with others) climbs from 29 to 62 percent over the same age span (see Schnitzer et al. 1989, p. 348). This pattern is also an illustration of the typical striving for independence from one's parents characteristic of persons in these age-groups and for the establishment of one's own lifestyle during one's student days.

If living arrangements were a matter of what the students *want*, that is, if the way they actually lived corresponded to the preferences reported in the social surveys, many more would live in their own or in shared apartments. Two-thirds of the students surveyed consider that such an arrangement is the ideal. Also, a large proportion (about one-fifth) would like to live in student housing facilities. However, they are less interested in the usual residence hall single room, than in the sort of apartment-style accommodations which have been introduced in the residence halls in recent years. Only a minority would prefer to live with their parents (ten percent) or in rooms sublet from private parties (three percent).

That such preferences are not realized and that dormitory places are fully booked out and have long waiting lists has to do with the acute housing shortage and the high costs of housing. For a room in a student dormitory, the student pays an average of 205 DM per month; for a sublet room, 251 DM. The monthly rent for part of a shared apartment averages 299 DM per month, and that for a single occupancy apartment or one shared with a partner, 384 DM per month (see Schnitzer et al. 1989, p. 358).

The changes in student preferences with regard to accommodations are linked to the general rise in society's demand for an increased standard of living. The independence offered by an apartment of one's own has a high attraction when compared to the possibilities offered by sublets that are often overly expensive or are coupled with rules for one's manner of living. Many students are therefore willing to work while studying in order to assure themselves this independence.

This characteristic also expresses a qualitative change in and a differentiation of the typical student role. Not all students still fit the traditional mold of a young person who enters the university immediately after completing the *Abitur* and wishes to finish a degree as quickly as possible in order to attain financial and professional independence. Forty percent of the students of today are 26 or older. Many have gained some work experience before beginning their studies. Half of them work regularly or occasionally during their period of education. Half of the students live with steady partners (ten percent are married), and six percent have children. An apartment of one's own is sometimes also the confirmation of a living pattern according to which student status has partially lost its transitional character. The freedom it confers is an aid to achieving one's own, sometimes alternative, lifestyle. This freedom is what makes student existence so attractive. Most students (eighty percent) enjoy being students and consider that the student role, with its living and learning opportunities, is all in all to be preferred to the situation of their non-student peers outside higher education.

- Student Representation and Student Associations

The living arrangements of students indicate that the higher education institution is not necessarily the place where for all students everything is "happening" as is frequently the case for Anglo-Saxon students. How students use their institution varies widely. Some come only to attend courses and to use the library; otherwise, they study, live, and work outside the institution. Others place the institution at the center of their existence, spending their study hours as well as their free time at the university or *Fachhochschule*. Such choices depend on the private situation, the living arrangements, and the individual interests of given students. Typically, a student biography includes different phases as to living patterns and participation in student community life.

Student interests are represented with regard to higher education at different levels. Student committees at the departmental level (*Fachschaft*) and their elected representatives constitute the forum for discussing student concerns related to the particular discipline or programme, such as study and examination regulations, organization of the curriculum, course schedules and teaching, and similar topics. These are issues which student representatives can also raise in the central composite bodies which deal with the current affairs and the development of the institution. In these bodies, students are represented according to the principles of the "group university" (see Chapter 2.3).

At most institutions of higher education, every registered student is automatically an obligatory member of the student body (exceptions to this rule are the institutions in Baden-Württemberg and in Bavaria). The "student body corporate" to which the student pays a low compulsory semester fee (15 DM), is represented by an elected General Student Committee (*Allgemeiner Studentenausschuß* - AStA). The reponsibilities of the student self-administration include academic, social, and cultural aspects as well as the representation of student interests in matters of higher education policy. Further-ranging general political activities and positions are not within the legally permitted scope of student self-administration.

This restriction has been a matter of controversy over the years, since the student committees have occasionally claimed to have a "general political mandate". The students are largely divided on this question. On the other hand, they widely agree to the assignment of four tasks to their representatives: i) academic counselling and aid; ii) participation in the setting of teaching contents and the conditions of examinations; iii) social issues such as contact among students, housing services, etc.; and iv) participation in institutional politics (see Peisert/Framhein/Bargel 1988, p. 279).

Only a small number of students make use of the opportunity to participate in student politics at the various levels. The potential interest is greatest at the departmental level where the issues most directly affect the academic lives of the students. Less interest is accorded to the central bodies at the institutional level or to general student politics as pursued by the General Student Committees (AStA). Over half of the students show no interest at all in these organs, a fact which is underscored by the notoriously low voter turnout (under thirty percent on the average).

Alongside these student representative bodies, a broad spectrum of groups and opportunities for meeting the political, musical, religious, social, recreational, and athletic interests of students also exist. Some of these groupings are institutionalized; others are spontaneous groupings the temporary nature of which indicates the changing scene of current issues and the coming and going of student cohorts.

Among the political groupings at higher education institutions are the student organizations affiliated with the major political parties of the Federal Republic. It is true, however, that the relationship between these organizations and their sponsoring parties is often characterized by a certain tension and disagreements. There are also a large number of local and national groups of every stripe, all of which contribute to a most colorful political scenery in the institutions. The informal groups, which tend to be more suitable for student individualism, attract a more active interest and participation than the established political organizations, less than ten percent of the students are active members of the latter organizations.

The recreational and cultural groups at the institutions, especially those making up the typically wide-ranging offerings of the institutional sports programme, have the largest clientèles. Permanent facilities at many institutions include choirs, orchestras and theater groups, as well as film clubs, and similar groups. Of greater selectivity is the interest in the activities of the Roman Catholic and Protestant student congregations. They have an active membership of about five percent of the student body and attract the interest of an additional fifteen percent. The traditional student corporations, which are usually confined to male membership, were an important part of student life in former times. They attract about five percent of the students today.

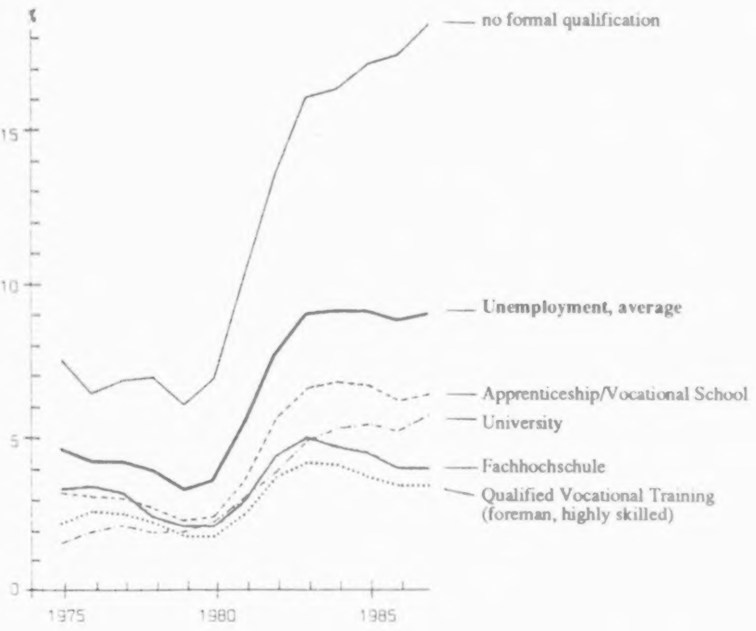
With the growth of enrollments, most higher education institutions have become large impersonal institutions. Their student populations are often as large as the populations of small or even middle-sized towns. This situation leads unavoidably to a greater or lesser degree of anonymity. The variety of student groups and organizations offers a certain counterweight to the impersonal structures of the institution as a whole.

6.3 Professional Plans and the Job Market

Among the important reasons for expanding enrollments and institutional facilities in the 1960's were the requirements of the employment system and the excellent job prospects of graduates. Well into the 1970's, unemployment

Figure 9

Unemployment according to Educational Qualification: 1975 - 1987 (in Percent)



Source: Tessaring (1988), p. 182.

for graduates of higher education institutions was virtually unknown. Since then, the number of unemployed graduates has risen steadily: from 20,000 in 1974 and 40,000 in 1980 to 125,000 in 1987. One fourth of these higher education graduates are "long-term" unemployed; that is, they are persons who have been unemployed for longer than one year. The number of unemployed graduates in 1987 approximated the number of graduates leaving all higher education institutions in one year. These numbers illustrate that today's students and graduates are confronted with considerable risks when making the transition from higher education to employment; even though, there are great differences depending on the field of study.

With respect to unemployment, graduates are not in a special situation, for *general* unemployment has also risen considerably (since 1980). As was always the case, all employees with training and qualifications have much better chances on the job market than those without a qualification. However, the particularly advantageous situation of university graduates during the 1970's no longer prevails. Their situation today is roughly that of other groups with qualified vocational training (see Figure 9).

When considering these developments, one must remember that the number of employed graduates with higher education qualifications rose from under one million in 1960 to over 2.6 million at present. The job market has thus absorbed an additional 1.5 million graduates in 25 years.

During the most recent years, the demand for graduates has undergone significant structural modifications. In the 1960's and 1970's, the civil service, particularly in the areas of education and administration, was the principal employer. It absorbed over half of the higher education graduates employed during this period. Since the mid-1970's, this area has become saturated. In addition, the tight government budgets of the 1980's have led to very restrictive hiring policies aimed only at replacing retiring employees. This tendency can be clearly observed within higher education itself (see Chapter 7.1). As the result of the creation of many new positions, the civil service age-structure rejuvenated itself during the 1960's and 1970's so that there is little need for replacement personnel. What need there is estimated to amount to only fifteen to twenty percent of the new graduates during the 1980's (see Hegelheimer 1984, p. 53 ff.). For this reason, graduates are now much more dependent on seeking employment in the private sector or on some sort of self-employment than was the case in former times.

It is especially ironic that the oversupply of academic graduates first became apparent with regard to the school system, for the "teacher shortage" is what led to the original emphasis on higher education in the 1960's. This shortage resulted from the unexpectedly strong drop in the birth rate since 1965, in the wake of which the school enrollments dropped and fewer teachers were needed. In 1981, there were already 13,000 unemployed teachers; in 1987, the figure had reached 28,000. This is by far the largest group among the unemployed academic graduates (see *Wissenschaftsrat* 1988, p. 373).

That the students have to a certain extent adjusted to the changing structure of their employment opportunities is clearest with regard to the teaching profession. In 1974, over forty percent of the entering students registered for teaching programmes; in 1976, the percentage had dropped to thirty; and in 1986, it had dropped to under ten percent. In turn, the humanities (and the natural science) students, from which teachers are usually recruited, have more frequently chosen Diplom or Masters programmes. These programmes are not aimed as directly at civil service employment as teacher training programmes are. The professional opportunities are nonetheless poor because no particularly abounding occupational fields are coupled to the humanities. The numbers of students registering for programmes in economics and business studies have nearly doubled over the last ten years (see *Wissenschaftsrat* 1988, p. 98 ff.).

The uncertain employment prospects constitute a notable factor of strain and stress for the students concerned, especially towards the end of their studies. In 1987, over one-third of the students at universities were convinced that they had poor employment prospects and were prepared for serious difficulties when looking for employment in their fields or even employment of any sort. There are major differences between fields in this respect whereby the students' subjective assessments generally correspond to the objective conditions on the job market. The employment prospects for graduates in the humanities and the social sciences are particularly unfavourable. The prospects for engineering as well as economics and business graduates, on the other hand, are particularly favourable. At *Fachhochschulen*, where engineering and business studies are the dominant fields, job opportunities are not regarded with the same pessimism as at universities (*Fachhochschulen*, 20 percent as contrasted to universities, 35 percent). At both types of institutions and in all fields, women assess their chances more pessimistically than do men (see Bargel et al. 1989).

One cannot expect that the current surplus of job-seeking graduates, that replaces itself regularly with every new examination year, will be reduced in the short run. In the especially hard-hit disciplines, students must therefore be prepared to cope with the uncertainties of the job market for some time to come.

The midrange forecasts, up to the year 2000, warrant a cautious optimism (see Tessaring 1988). According to a new model estimate of the *Bund-Länder* Commission for Educational Planning and the Promotion of Research, around 0.7 to 0.8 million persons with higher education will retire from work between 1985 and the year 2000. During the same period, almost two million new academic graduates will enter the job market representing a net growth of about 1.2 million, which would thus lead to a total of nearly 4 million graduates who want to be employed ("supply perspective").

On the other hand, model estimates of the job market from the "demand perspective" suggest that its structure will change in such a way as to increase the number of highly qualified positions, especially in the service sector. The demand also promises to approach 4 million. Such model estimates, that is the lesson learned from several "generations" of forecasts for the academic labor market since the 1960's, are frought with many uncertainties (see Teichler/Sanyal 1982). The educational behavior of future generations of students, the future economic growth, and the development of the surrounding technical, social, and political conditions could also bring about entirely different scenarios by the year 2000.

7. The Teaching Staff

7.1 The Structure of the Academic Staff

The academic staff in higher education may be generally subdivided into the professors and the sub-professorial staff, i.e. the junior and middle grades of academically trained personnel (colloquially called *Mittelbau* in German). The academic staff is supplemented by the non-academic administrative and technical staff.

In 1986, the higher education budgets accounted for 80,900 full-time academic positions. These are divided into professors and sub-professorial staff in a 40:60 ratio. With regard to this division, there are clear differences between the institutional types: Almost all sub-professorial positions are granted to the university sector, *Fachhochschulen* having hardly any junior or middle grade positions to support teaching and research (only five percent).

Although the number of students has grown rapidly since the mid-1970's, the number of personnel in higher education has remained almost constant during the same period. Accordingly, the teacher-student ratio has deteriorated significantly. In 1986, the overall ratio was 1:17 and the professor-student ratio, 1:40 (1975 = 1:11 and 1:28, respectively).

The budgeted positions in higher education are supplemented by a considerable number of personnel who are supported by external funding raised for research activities. Furthermore, the number of actual employees is increased due to a certain amount of "sharing" of positions by two or more persons. Thus a total of 96,000 academic staff members are employed by higher education institutions, a total which exceeds the number of budgeted staff positions by about 15,000. These additional jobs are typically designated for junior and middle grade academic staff members, both in the university and in the *Fachhochschule* sectors. This results in a de facto professor - sub-professorial staff ratio below that in the official budget (see Table 16, A and B).

Another addition to the teaching and research potential of higher education is part-time academic personnel. At the professorial level, this group includes the guest and honorary professors. The latter are professors who teach "for honor's sake", that is, without an honorarium. The most numerous category of the part-time academic personnel is composed of the staff members with teaching commissions (*Lehrbeauftragte*), who supplement the regular course offerings on an hourly-wage basis. Often, these are representatives of the professional world who are recruited for an assignment of one or two course-hours per week. Also included in the part-time academic staff are tutors and graduate assistants (*Wissenschaftliche Hilfskräfte*). They perform auxiliary duties in teaching or research, work a maximum of twenty hours per week, and are paid with institutional or with external funds. The part-time academic staff members, numbering about 46,000, about half the number of the full-time staff, represent an important back-up source for the accomplishment of the teaching and research functions in higher education.

During the post-war period, the structure of the full-time academic staff developed into a complex and differentiated pattern of hierarchies and positions. The Higher Education Framework Act of 1976 aimed at a standardization of this staff structure. Henceforth, the academic personnel was to be classified according to its functions into only four groups: the professors, and three categories of the sub-professorial staff (assistants, academic employees, and teachers for special assignments). This concept has not been entirely implemented. In reality, slow progress in the personnel structure transformation has left a variety of pre-1976 posi-

Table 16
Higher Education Academic Staff: 1986

Staff	Universities		Fachhochschulen		All Institutions	
A. Staff Positions						
- Professors (C2 - C4)	24,500	35%	8,700	95%	33,600	41%
- Sub-Professorial Staff	46,300	65%	500	5%	47,200	59%
Total	70,800	100%	9,200	100%	80,900	100%
B. Staff Employed						
- Professors (C2 - C4)	21,600	25%	8,900	86%	30,500	32%
- Sub-Professorial Staff	64,000	75%	1,500	14%	65,500	68%
Total	85,600	100%	10,400	100%	96,000	100%
Staff Employed, classified:						
Professors						
- C4	9,956	46%	11	50%	9,967	33%
- C3	7,406	34%	4,481		11,887	39%
- C2	4,210	20%	4,458	50%	8,668	28%
Total	21,572	100%	8,950	100%	30,522	100%
Sub-Professorial Staff						
- Assistants (C1)	3,336	5%	277	18%	3,343	5%
- Academic Employees	56,238	88%			56,508	86%
- Teachers for Special Assignment	4,472	7%	1,210	82%	5,682	9%
Total	64,046	100%	1,487	100%	65,533	100%
Full-time Academic Staff, Total	85,618		10,437		96,055	
C. Part-time Academic Personnel						
- Professors (Guest, Honorary)	5,300		100		5,400	
- Staff with Teaching Commissions	17,200		11,000		28,200	
- Graduate Assistants, Tutors	11,100		1,400		12,500	
Total	33,600		12,500		46,100	

Source: BMBW (1988): Grund- und Strukturdaten 1988/89, p. 196-201, 204.

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tions and pay scales on the books. In addition, the revision of the Framework Act in 1985 created new positions for young scholars so that today, as a result of old titles, three historical layers of staff structure overlap: one that had developed before 1976, the one created by the Framework Act of 1976, and the additional one resulting from the revisions in 1985.

- Professors

Professors have the primary responsibilities for research and teaching in higher education. According to their specific terms of employment, they pursue their tasks independently in the fields of science and art, teaching and doing research. The specific terms of employment depend on the type of institution. At universities, professorial appointments are characterized by an evenly divided responsibility for research and teaching. At *Fachhochschulen*, the priority is on application-oriented teaching; at academies of art and music, it is on teaching and performance in the creative arts.

Teaching loads and the qualification requirements for appointment vary accordingly. University professors usually have a teaching load of eight semester hours per week; *Fachhochschule* professors, of sixteen to eighteen hours per week. The general requirement for a professorship is a degree from an institution of higher education. At universities, two additional qualifications are prescribed as a rule: the doctorate and the *Habilitation*. Professors at *Fachhochschulen*, on the other hand, are expected to have, in addition to the doctorate, particular achievements with regard to the application or development of scientific findings and methods. Also, professors at *Fachhochschulen* are required to have worked in their professions for at least five years during which three years must have been spent outside higher education, a career pattern which is also common for engineering positions in the university sector. The professors at art academies must have distinguished themselves in the creative arts as part of their job qualifications.

Although the federal framework legislation for higher education suggests a uniformly named group of "professors", they can be easily classified, de facto, into three subgroups designed as C2, C3, and C4. These designations, however mysterious to the outsider, refer to different salary scales which also prove to be clearly distinct hierarchical levels in the every-day life of higher education. The category, C4, is the highest level of the professorial hierarchy, traditionally reserved for chaired professors. While the uniform title, "Professor", was temporarily introduced, the title *"Ordinarius"* (or "chair holder") is nowadays, at least in some cases, officially used once again to distinguish the C4 professors from the rest. In 1986, the designation, "university professor", was officially introduced for professors at universities in order to differentiate them from *Fachhochschule* professors.

The category of C4 professors exists only in the university sector (including art academies). The roughly 10,000 C4 positions make up almost half of the professorships in this sector (see Table 16). The C3 and C2 professorships representing the remaining half of the positions in the university sector are characterized, in part, by a narrower topical definition of their teaching and research spectra. In the *Fachhochschule* sector, professorships are about evenly divided into C2 and C3 positions.

As a rule, professors are appointed civil servants with unlimited tenure. An exception is the C2 category; at present, approximately ten percent of these positions have limited tenure. According to the new personnel plan (1985), C2 professorships in the university sector will be phased out. In the future, there will thus be C2 and C3 professors at *Fachhochschulen* and C3 and C4 professors in universities. The C2 positions in universities will in the future be positions with limited tenure reserved for succeeding scholars who have finished their *Habilitation* (senior assistant; university lecturer).

Table 17

Monthly Gross Earnings of Professors: 1987
(Assuming: Married, 1 Child)

Salary Category	Earnings in DM at Career Start (lowest age grade)		Earnings in DM at Career End (highest age grade)	
C4-Professor	5,049.-	(100%)	8,136.-	(100%)
C3-Professor	4,016.-	(80%)	7,087.-	(87%)
C2-Professor (or University Docent)	3,665.-	(73%)	6,378.-	(78%)
C1-Academic Assistant	3,556.-	(70%)	-	-
In comparison:				
Gymnasium Teacher	3,658.-		5,786.-	
Judge (Local court, Council)	4,453.-		7,274.-	
Gross salary of				
- Employees in Industry and Trade (∅ 1987)	3,884.-			
- Industrial workers (∅ 1987)	2,848.-			

Source: Federal Salary Scale of 1.1.1987; see Gratz/Krauss (1987), p. 163 ff. Statistisches Bundesamt (1988): Statistisches Jahrbuch 1988; p. 480 and 187.

The different significance accorded to the three professorial categories is expressed in their graduated salary scales. Compared to the official top end of the C4 scale, the salaries of C3 and C2 professors are approximately ten percent lower than those of the chaired professors (C4). "Calls" from other universities or the ensuing negotiations "to stay put" can raise the salary of a C4 professor by 2,000 DM, in rare cases, by as much as 5,200 DM, above the officially highest C4 salary. The range of salaries is shown in Table 17.

- Sub-Professorial Staff

The academic personnel beneath the professorial level can be divided into three major groups (see Table 16 B): assistants (5 %), academic employees (86 %), and teachers for special assignments (9 %).

Academic assistants (*Wissenschaftlicher Assistent*; called *Hochschulassistent* until 1985) must in principle have completed their doctoral degrees. They fill the classical qualifying positions for a professorial career. This status is also indicated by their C1 salary classification, this designation being the lowest level of the "professorial" salary scale. Positions for academic assistants are limited to a maximum of six years (ten years in Medicine). Assistants have the responsibility of rendering academic/scientific services in research and teaching which should also serve to promote their own academic qualifications. The teaching load of assistants is usually limited to four hours per week. They are to be given sufficient time to pursue their individual scholarly work. Ending a period of relative independence, the revised legislation of 1985 provides once again for a closer attachment of assistants to supervising professors.

Academic employees and artistic employees form the largest group within the sub-professorial staff. They must have completed a first degree but are not required to have finished a doctorate. They are also obliged to render scientific services. Within the scope of their duties, they may pursue further academic qualification (doctorate, *Habilitation*); but, unlike the requirements for academic assistants, this is not an explicit requirement of their positions. Their assignments may include specified teaching duties of up to sixteen hours a week. The majority of the academic employees have limited contracts, most of them running for five years; a minority of them are employed on an unlimited basis. The salary is roughly comparable to that of an assistant.

Teachers for special assignments are employed for imparting practical skills and knowledge for which professorial qualifications are not required. For example, teachers and lawyers may be delegated to serve at higher education institutions. Typical members of this group are also foreign language instructors in higher education.

7.2 The Academic Career and the Recruitment of Professors

The road to a professorship is long; for young academics it involves considerable uncertainties and risks. The first degree is followed by two phases of qualification which require an average of up to about twelve years: a first phase for taking the doctorate (four to five years) and a second one for completing the *Habilitation* (seven to eight years, see Table 18).

- The Doctorate

The doctorate is the basic requirement for an academic career, but it is also a highly coveted qualification for a professional career outside of higher education, particularly as the abbreviated title, "Dr.", is still regarded as a proof of excellence in professional and social life in general. The number of doctoral degrees awarded per year rose from 10,500 in the mid-1970's to around 14,500 in 1986. At present, the average age at which the doctorate is obtained is between 31 and 32 years.

- The Habilitation

Unlike the doctorate, which has been awarded with a frequency increasing in rough proportion to that of enrollments, the annual number of *Habilitations* has remained steady at about 1,000 since the mid-1970's. The *Habilitationsschrift*, an original research thesis exceeding the doctoral dissertation in its scope and level of scholarship, is the most important part of the *Habilitation* process. In addition, the candidate is required to give a lecture to that faculty of his university which confers, upon successful completion of the process, the *venia legendi*, i.e. the right to teach in a certain discipline. This "teaching qualification" is thus primarily founded on the giving of proof of one's research qualification. The pedagogical-didactic competence for teaching is considered to be proven by the record of teaching experience. The average age at which the *Habilitation* is completed is currently 39.

- Appointment Procedure

The *Habilitation* is a prerequisite, but not a guarantee for a professorship. When a professorship is to be filled, an appointment procedure (*Berufungsverfahren*) is initiated. The university forms an appointment committee the members of which are drawn primarily from the department in which the position is to be filled. Professors hold the majority on this committee. The sub-professorial staff and the students are usually included with at least one representative each.

Since the early 1970's, vacant professors' positions have generally been publicly advertized. In the application process, young scholars compete with professors who although they are in office, would stand, if they succeeded in receiving a new "call", to gain increased facilities, salary, and prestige. The ap-

Table 18

Basic Data on Junior Scholars: 1976 and 1986

Basic Data	1976	1986
Doctorates		
Number per Year	10,497 (1975)	14,535
Share of Women	16.0 Percent	25.5 Percent
Average Age	31.0 Years (1977)	31.5 Years
Average Period for Completing a Doctorate	. .	4 - 5 Years
Habilitations		
Number per Year	989 (1976)	1,014
Share of Women	. .	7.6 Percent
Average Age	37.7 Years (1978)	39.1 Years
Average Period for Completing a Habilitation	. .	7 - 8 Years
Replacements due to Retirement	1986 - 1990 ca. 500 per year 1990 - 2000 ca. 700 per year	

Source: Wissenschaftsrat (1988), p. 164-199; 381-395.

pointment committee selects from the applications a list of three candidates who are usually invited to give trial lectures. At universities, as opposed to *Fachhochschulen*, "in-house" appointments are not, in principle, permitted. This means that young academics cannot be appointed to professorships at the universities at which they have earned the *Habilitation*; just as C3 professors cannot be appointed to C4 professorships at the same university.

The appointment committee must justify in detail its proposal of candidates to the university for its internal decision-making process and to the responsible Ministry of the *Land*. For each of the three candidates on the select list, a detailed recommendation (*Laudatio*) is written which covers the candidate's professional career, scholarly achievements, as well as personal and professional qualifications for the advertised position. If the proposal meets with the approval of the institutional bodies (the faculty and senate), it is passed on to the appropriate ministry of the given *Land*. The Minister is not bound by the order of preference with regard to the three candidates and may reject the select list as a whole. In exceptional cases, the Minister may, after consultation with the university, appoint qualified persons on his own. Such actions occur in only very rare cases and usually lead to ill feelings on the academic side.

The chances that a young academic will be called to a professorship are not particularly good at present. Between 1960 and 1975, many new professorships were created. In the university sector, there were 5,200 professorial positions in 1960 and 22,200 in 1975. Since 1975, the number of positions has barely increased. The positions available during the growth period in the 1960's and the early 1970's were filled, for the most part, with young scholars. In many disciplines, for this reason, there has since then been a comparatively low demand for replacements, a situation which will prevail for the next few years (see Wissenschaftsrat 1988, p. 194 ff.). The result has been a veritable logjam of applicants. The extent to which this is so is illustrated by a recent study. It indicates that between 1980 and 1985, of the 4,600 junior scholars who had completed the *Habilitation* and had applied for professorships, only 740 (sixteen percent) were appointed (see Karpen 1986, p. 135). The annual number of *Habilitations* is currently twice as high as the annual number of positions opening up due to retirement.

This bottleneck for the succeeding generation of scholars has unpleasant consequences from the individual as well as the institutional perspective (see also the recent studies by Holtkamp et al. 1986, Bochow/Joas 1987).

During the twelve years of specialization in scholarship and research following the first academic degree, a junior scholar typically holds a variety of untenured academic jobs or scholarships (for example, that of graduate assistant, academic employee, and assistant, see Figure 10). From the *individual* perspective, this situation can lead to a very uncertain future. Whoever is not appointed to a professorship is faced with the difficult task of beginning a non-university professional career at an advanced age (over 40). The new positions earmarked for habilitated applicants (senior assistants, university lecturers) also have only limited tenure, and in unfavorable cases, only postpone individual problems another six years.

From the *institutional* perspective, the question arises as to what extent the professional risks of an academic career inhibit motivation and creativity or prompt qualified junior scholars to turn away completely from such a career. A number of programmes have therefore been developed over the last years to mitigate the unfavorable career outlook. One of these is the *Fiebiger Programme* (named for its initiator, the President of the Erlangen-Nürnberg University). This programme allows the universities to replace a retiring professor five years ahead schedule (ca. 500 additional positions). Other programmes include *foundation professorships* paid for by private funding for five-year periods (ca. 75), as well as *Heisenberg-Scholarships* (ca. 350). The latter are designed to distinguish highly qualified junior scholars who finish the *Habilitation* at a particularly early age. The Heisenberg programme enables them to engage in qualified research activity for a transitional period until they can obtain professorships.

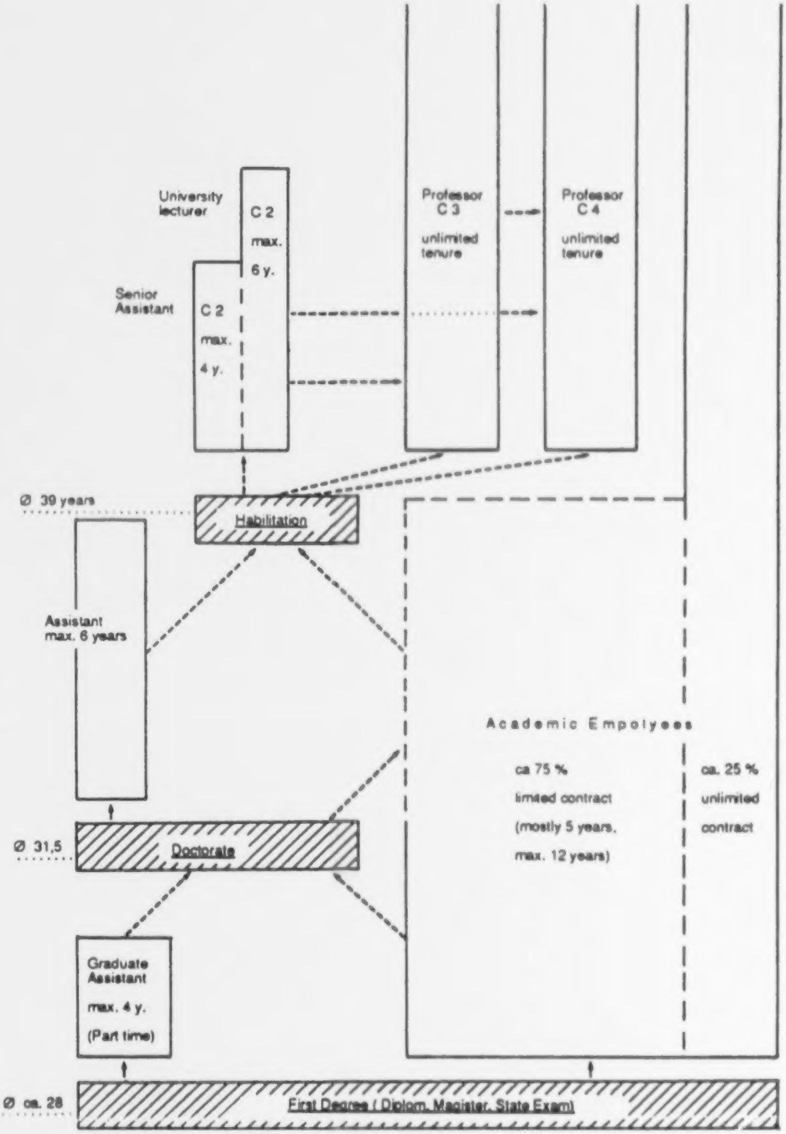
These programmes are also intended to anticipate a new situation. Starting in the 1990's, a larger number of professorships will open up due to retirement. In a number of disciplines, the current lack of academic career chances could then turn into a lack of qualified replacement scholars. This reality is now being grasped, and policy concepts to counterbalance this long-term prospect are presently under review.

Two issues are at present particularly topical in all policy discussions on the recruitment of professors: the low number of women in professorial positions and the high average age of those obtaining the *Habilitation* and the first appointment.

Women make up only twenty-five percent of those receiving doctoral degrees. With each step up the academic ladder, the percentage of women drops further: twelve percent of the assistants, ten percent of the C2, six percent of the C3, and a mere two percent of the C4 pro-

Figure 10

Academic Routes to a University Professorship
(Staff Structure Model)


University lecturer
C 2
max.
6 y.
Senior Assistant
C 2
max.
4 y.
Professor
C 3
unlimited tenure
Professor
C 4
unlimited tenure
Ø 39 years
Habilitation
Assistant
max. 6 years
Academic Empolyees
ca 75 %
limited contract
(mostly 5 years,
max. 12 years)
ca. 25 %
unlimited
contract
Ø 31,5
Doctorate
Graduate Assistant
max. 4 y.
(Part time)
Ø ca. 28
First Degree (Diplom, Magister, State Exam)

For Medicine: Assistant max. 10, Senior Assistant 6, University lecturer 10 years.
For Engineering: Senior Assistant max. 6 years.

Source: Staff Structure Model according to HRG 1985; Average Age as of 1986, see Table 18.

fessors are women (see Wissenschaftsrat 1988, p. 212). Nonetheless, empirical studies show that women students consider pursuing the doctoral degree and an academic career just as frequently as do their male counterparts. That such plans are seldom carried out points to the social conditions incident to the founding of a family and perhaps also to the culture of the university with its still almost entirely male teaching body. That a political will is forming to increase the numbers of women in academic careers can be seen from the new passus in the 1985 revision of the Framework Act: "In the fulfillment of their functions, the institutions of higher education shall endeavor to gradually eliminate the disadvantages existing for female scientists" (HRG, § 2.2).

Another issue concerns the *long periods* required for academic qualification and the *late entry* into an assured professorial position. While the obligation to pursue a *Habilitation* was relaxed during the 1970's, even the repeal of the requirement having been discussed, this prerequisite for a professorship is no longer questioned today. The appointment of a scholar without a *Habilitation* is reserved to the very exceptional cases covered by the "genius clause". A general consensus, however, exists that the doctoral and *Habilitation* phases (like first degree studies) should be shortened and that a significant drop in the average age at receipt of the *Habilitation* should be achieved, to the benefit of both the individual junior scholars and the institutions concerned.

8. International Relations

The institutions of higher education in the Federal Republic maintain a wide variety of international links which take place at three partly interconnected levels: partnerships between institutions, the foreign links of scholars, and exchange programmes for students. The political authorities accord high importance to the foreign relations of higher education at all levels. This importance will be enhanced as a result of the realization of the European Internal Market as planned by the Uniform European Act of the EC member states. Few policy areas in the Federal Republic of Germany have met with the broad agreement across party lines that has long characterized the international relations of higher education.

8.1 Institutional Arrangements

Because foreign cultural relations fall within the authority of the Federal Government, a policy of "cooperative cultural federalism" has been pursued by the *Bund* and the *Länder* since the founding of the Federal Republic with regard to the international relations of higher education. This arrangement is similar to that obtaining for the joint tasks of "Higher Education Construction" and "Educational Planning and Research Promotion" since 1969 (see Chapter 1.2). Thus, for example, the Foreign Office which bears the main responsibility for foreign cultural affairs and other federal ministries, on the part of the *Bund*, and the Standing Conference of Cultural Ministers, on the part of the *Länder*, have worked together on the cultural agreements which the Federal Republic has concluded with over 50 countries since 1953. Bilateral academic relationships regularly play an important role in these agreements.

At the national level, various organizations are active in the promotion of international academic relations, all of which have their specific profiles and functions. These "mediatory" organizations which are typically funded by federal ministries usually have far-reaching autonomy in designing their programmes. The majority of the funding for these organizations comes from the Foreign Office. Other contributors include the Federal Ministries of Education and Science (BMBW), of Research and Technology (BMFT), and of Economic Cooperation with Developing Countries (BMZ).

The two most important institutions involved in the promotion of international academic relations at national level are the German Academic Exchange Service and the Alexander von Humboldt Foundation. Both of these organizations hark back to a tradition which began in the 1920's. The activities of both institutions have been significantly expanded since the 1960's.

The *German Academic Exchange Service* (*Deutscher Akademischer Austauschdienst* - DAAD) is the autonomous organization of higher education institutions which is responsible for promoting academic relations with foreign countries. It is institutionally comparable to the *Deutsche Forschungsgemeinschaft* (DFG) in its responsibility for promoting research. The principal responsibilities of the DAAD include the promotion of the international exchange of students and of junior scholars as well as the recruitment of German scientists and lecturers of German language to institutions of higher education abroad. In 1987, the DAAD had a budget of 186 million DM. These funds were spent on year-long scholarships, shorter scholarships, and information programmes for around 14,000 foreign and 12,000 German students and junior scholars. Around 4,200 foreign and 1,800 German students and junior scholars were supported for at least one year. In the area of scholarships, the DAAD also supervises a number of special programmes including the ERASMUS programme to increase the mobility of higher education members within the European Community, the promotion of partnerships with Eastern European universities, and *sur-place* scholarships in developing countries. Another important responsibility of the DAAD is the provision of information about higher education in the Federal Republic and abroad.

The *Alexander von Humboldt Foundation* is concerned primarily with the promotion of highly qualified junior scholars. In 1987, the budget of this foundation amounted to 52 million DM. It served to support the extended research visits of 1,500 foreign scholars at universities within the Federal Republic as well as the research visits of 150 German scholars abroad. The Humboldt Foundation is particularly concerned with remaining in contact with its "alumni". The network of old *"Humboldtians"* includes in the meantime around 12,000 scholars throughout the world who have become important contact persons for German scholars. The activities of the foundation to maintain lifelong contact with its alumni include regular information on developments in the Federal Republic, regional meetings and lectures abroad, donations of research equipment, and renewed invitations.

Alongside the DAAD and the Humboldt Foundation, a number of other nation-wide organizations are active in the field of international academic relations, albeit on a smaller scale: The *Deutsche Forschungsgemeinschaft* (DFG), for example, provides German senior and junior scholars with grants for research abroad. The Fulbright Commission specializes in bilateral exchange programmes with the USA. The foundations of the political parties provide scholarships for German students and for students from developing countries. The Otto Benecke Foundation supports refugees seeking asylum and students from developing countries. The Carl Duisberg Society promotes practice-oriented training abroad. A very pluralistic array of institutions and programmes exists which facilitates a flexible reaction to the manifold applications and problems in international academic exchange.

On the part of the *Länder*, this variety of support measures is supplemented by scholarships and short-term "emergency" financial aid for foreign students as well as supplementary travel grants for German scientists and aid for German students studying abroad.

At the local level, the International Offices (*Akademisches Auslandsamt*) are responsible for all international concerns of the particular institutions and function as the connecting link between the national scholarship organizations and the higher education institutions. They enjoy a long tradition at German universities and are presently being established at a number of *Fachhochschulen*.

Aside from the numerous individual initiatives of staff and students with respect to studies abroad, the formalized co-operation among higher education institutions provides a fruitful basis for the development of foreign relations at many levels.

As of 1987, the West German Rectors Conference numbered 1,357 partnerships or agreements between higher education institutions in the Federal Republic and in foreign countries. On the average, each university was engaged in sixteen partnerships. The University of Tübingen with 71 partnerships had by far the largest number, followed by the two West Berlin universities (44 and 42), Hamburg and Munich (38 each), and Heidelberg (37). The 99 *Fachhochschulen* had concluded altogether 216 partnership agreements. The largest number of partnerships (around forty percent) was formed with Western European countries, Great Britain ranking at the top (198). Some ten percent of the agreements were made with an Eastern European partner institution, most frequently with Poland (67). Thus, over half of the partners are European institutions. Overseas, the USA (293) and the People's Republic of China (82) lead the list. These two countries alone account for 28 percent of all the currently existing partnership agreements (see WRK 1987).

8.2 German Students Abroad

A period of study abroad is generally regarded as a significant element of a student's higher education and as one worthy of support. Alongside the expected personal, academic, and linguistic gains of the individual student, the public interest also gains something. Because of the increasing number of international inter-relationships, there is a general interest in graduating linguistically competent persons with experience abroad. Therefore, there was considerable consternation when the Unesco statistics on students studying abroad revealed, in the mid-1970's, a relative drop in the number of German students studying abroad. While enrollments had continually increased, the annual number of students studying abroad had stagnated since the early 1960's at around 10,000.

Studies that were thereupon devoted to student "weariness" with regard to studying abroad (*Auslandsmüdigkeit*) showed that the problem was not one of lack of interest in general, but that organizational and financial factors stood in the way (see Framhein/Peisert 1977, Gerstein 1977). These included, in particular, the restrictive study situation with its dominating *numerus clausus* debate. Students reported fears that they might lose their study places when inserting a period of study abroad. Another hindrance was the "equivalence question", i.e. the uncertainty as to what extent study achievements abroad would fit into the curriculum and comply with examination requirements at home. Finally, there was the problem of cost. If not supported by scholarships, studies abroad usually imply additional costs, especially so, in countries requiring students to pay very high tuition fees, which is not the case in the Federal Republic.

During the 1980's, the concerted efforts of the *Bund* and the *Länder*, as well as of the science organizations and the higher education institutions themselves, brought about decisive progress in the solution of all of these problems. Although the overcrowding in higher education has steadily increased, the 1977 decision to open up higher education has secured study places in most disciplines, and students need not fear losing an option when they go abroad.

In addition to studies abroad that are individually planned and pursued by the student, "organized" group programmes have been initiated at the departmental level. Such programmes guarantee that foreign achievements form an integral element of study programmes at home and are credited in full upon return. These "integrated courses of study abroad" have been effectively expanded since 1987 by the similarly conceived ERASMUS Programme at the EC level (see Teichler/Smith/Steube 1988). As part of these organized programmes, additional costs arising from a temporary foreign programme of one or two semesters are generally covered. Such a financial incentive is also established for students who finance their education fully or in part under the BAföG scheme. They have a legal claim to additional-cost coverage for temporary studies abroad.

Such measures, which were taken in the past few years, have made study abroad easier and more attractive. They supplement the classical foreign study scholarships awarded by the higher education institutions, the DAAD, and other scholarship organizations on the basis of selective and competitive criteria.

The absolute number of students abroad has more than doubled since the mid-1970's. In 1987, more than 25,000 German students studied abroad. Table 19 lists the most important host countries in which more than 1,000 German students studied during that year. In absolute terms, the Federal Republic led all the industrialized countries in the number of students it "exported". In 1985 (comparative data for 1987 are not yet available), 22,400 students from the Federal Republic studied abroad, a figure followed by that of the USA (19,700) and of Italy (18,000). According to Unesco statistics (cf. BMBW 1988, p. 182 f.), only five countries sent more students abroad than did the Federal Republic. These were the People's Republic of China, Iran, Greece, Morocco, and Jordan, whose students all have different constellations of reasons for studying abroad.

Study abroad is pursued with varying frequency within the disciplines. An average of 6.6 percent of the 1985 graduates of the universities in the Federal Republic had studied abroad temporarily, two-thirds of these for more than half a year. Students in the humanities participate disproportionately in studies abroad (over eleven percent). This is largely the result of the integral part foreign study plays within the modern language programmes. Also, medical graduates will have had a good deal of study experience abroad (almost nine percent). This high proportion results in part from the admissions restrictions (*numerus clausus*) in medicine in the Federal Republic, which have induced some German students to make use of study options abroad, e.g. in Eastern European countries (Hungary and Romania). Natural scientists and engineers are least likely to study abroad; less than three percent of the graduates in these fields participated in foreign study programmes.

8.3 Foreign Students in the Federal Republic

The more-or-less 25,000 German students studying abroad in 1987 were matched by about 81,000 foreign students enrolled in higher education institutions in the Federal Republic. The absolute numbers of foreign students have expanded steadily; however, the proportion they represent of the total number of enrolled students has remained constant at about six percent since 1970 due to the steady expansion of the number of German students. In addition to being a student "export" leader, the Federal Republic is also one of the "import" leaders. In 1985, the USA led the field, by far, with around 345,000 foreign students. France was next with 123,000; the Federal Republic, third, with 79,000; the Soviet Union was fourth with 63,000; and the United Kingdom, fifth, with 45,000 foreign students.

Foreign students can study in all German higher education institutions. In fields with admissions restrictions, six to eight percent of the available places are reserved for foreigners. The requirements for admission include a secondary school leaving certificate equivalent to the German school certificates qualifying for university or *Fachhochschule* entrance as well as proof of a sufficiently good command of the German language to permit studying. Foreign applicants whose secondary education is not classified as equivalent to a German secondary education, and this is the case for applicants from most non-European countries, must sit a special examination to determine their eligibility for admission to higher education (*Prüfung zur Feststellung der Hochschulreife*). Students can prepare for this examination in one-year preparatory courses at so-called *Studienkollegs* which are associated with a number of universities and *Fachhochschulen*.

As is the case of German students, foreign students enrolled in higher education institutions in the Federal Republic do not have to pay tuition fees. As a requirement for the residence permit, the alien registration office requires formal proof that the student has sufficient financial means for covering his living expenses. As foreign students are only permitted

Table 19

Home Countries of Foreign Students in the Federal Republic and Host Countries of German Students Abroad: 1987

Foreign Students in Germany, F.R.			German Students Abroad		
Home Country	Students		Host Country	Students	
	abs.	%		abs.	%
1. Turky	9,790	12.1	1. USA	4,900	19
2. Iran	8,793	10.8	2. Austria	4,872	19
3. Greece	6,208	7.7	3. France	3,700	15
4. Austria	4,240	5.2	4. Switzerland	3,209	13
5. USA	4,183	5.2	5. Italy	1,900	8
6. Korea	3,340	4.1	6. Great Britain	1,500	6
7. France	2,650	3.3	7. Canada	1,100	4
8. Italy	2,307	2.8			
9. Yugoslavia	2,153	2.7			
10. Indonesia	2,131	2.6			
11. Great Britain	2,002	2.5			
12. Netherlands	1,949	2.4			
13. China	1,877	2.3			
14. Spain	1,804	2.2			
15. Poland	1,577	1.9			
16. Switzerland	1,259	1.6			
17. Japan	1,158	1.4			
18. Luxemburg	1,067	1.3			
19. Vietnam	1,052	1.3			
1.-19. together	59,540	73.0	1.-7. together	21,181	84
other Countries	21,550	27.0	other Countries	3,919	16
Total	81,090	100.0	Total	25,100	100

Source: BMBW (1988): Grund- und Strukturdaten 1988/89, S. 178 f. u. 186.

to work, while studying, on a very limited basis, studies cannot be financed by jobs.

With respect to their composition and their intentions, foreign students in the Federal Republic may be divided into three very different groups. The classical group is made up of foreign students who complete only a small part of their academic studies in the Federal Republic. They are the counterparts of the typical German students abroad. Most of them come from industrialized countries and are concentrated up to nearly fifty percent in the modern languages and the humanities. The second group is composed of students from developing countries who often complete their entire higher education in the Federal Republic, frequently in engineering. The third group is formed by the continually growing numbers of children of foreigners working in the Federal Republic. They have usually lived in the country for a long time and have acquired their qualifications for higher education at German secondary schools. This group of "domestic" foreign students (or *Bildungsinländer*, as they are called in German) makes up around two-fifths of the entering foreign students (at *Fachhochschulen*, around three-quarters). If they do not have the means to finance their higher education, they are entitled to financial assistance under the BAföG scheme, like German students.

The large size of this group of "domestic" foreign students is reflected in the composition of foreign students by country. Turkey and Greece, along with Iran, lead the field and make up one-third of the total. The remaining countries of origin range over a wide spectrum in which another sixteen countries are represented in the Federal Republic with more than 1,000 students each (see Table 19).

From the countries of the Europe region in the Unesco definition (i.e. including the USA and Canada) come 59 percent of all foreign students in the Federal Republic. Of these, 3.6 percent come from the Eastern European COMECON states, 5.7 percent are from the USA and Canada, 6.8 percent are from Austria and Switzerland, German-speaking neighbors, and 24 percent come from one of the eleven partner countries of the EC.

In the move towards the integration of the EC-member states, the goal is that in the future, ten percent of all European graduates should have had a study-abroad experience in another EC country. If this goal is supported with suitable measures, one can expect the exchange of students within this region to increase widely beyond the present levels. The realization of this goal will also provide a further impulse for German students to study abroad. For contrary to the assumed "weariness" of studies abroad, student surveys in the Federal Republic indicate a keen interest on the part of students in foreign studies programmes. Many more students would participate if they perceived the opportunity.

9. Future Perspectives of Higher Education

The enormous expansion of higher education in the Federal Republic and the increasing importance of science and technology over the past 25 years have propelled higher education more than ever into the limelight. State, industry and society have increased their expectations, have levelled criticisms, and have tried to influence the course of higher education. The traditional notion of study and research in an ivory tower on the fringes of society no longer seems appropriate. Rather, it may be replaced by the image of a "crystal palace", the location of which has moved from the periphery to the center. The higher education sector has grown. Its inner life has become more visible to outsiders, thus making it more vulnerable.

The growth of enrollments, which has governed the development of higher education in the Federal Republic, was accompanied by an ample expansion of physical facilities and personnel well into the 1970's. The "fat 70's" were followed by the "lean 80's", during which resources stagnated while enrollments continued to climb steeply. The West German Rectors Conference (WRK), representing the interests of higher education institutions, and the Science Council, the most important advisory body for higher education policies, the members of which stem from academic life, as well as the governments of the *Bund* and the *Länder*, have of late repeatedly pointed out the losses incurred by the overburdening of the higher education infrastructure during the 1980's.

Both the Rectors Conference and the Science Council published basic reports in 1988, the one, on the "Future of Higher Education" (WRK 1988b), and the other, on the "Perspectives on Higher Education in the 90's" (*Wissenschaftsrat* 1988). We have frequently made reference to these reports. The positions of both organizations are similar in substance and in contour. They do not contain revolutionary ideas for revamping the higher education institutions; instead, they advocate consolidation and gradual change. This tendency is a general one in the current discussion of higher education issues in the Federal Republic. Unlike the fundamental debates of the late 1960's and early 1970's, today's agenda is characterized by a step-by-step policy.

At present, there are signs that a turning point has been reached in the long-term predicament of higher education brought about by institutional overcrowding. The appeals of the higher education institutions to the governments of the *Bund* and the *Länder* as well as to the general public for increased funding and better facilities, as outlined in the strategy reports of the Science Council and the Rectors' Conference, have received effective support from the new enrollment predictions for the 1990's. The long-predicted, radical drop in enrollments will not come about, according to these predictions. The slight drop predicted by the latest forecasts will not relieve the overcrowding of higher education facilities. This prediction has supported the view that temporary, emergency, and special programmes are no longer adequate. What appeared to be the silver lining of the cloud, when the *Bund* initiated its special programme in late 1988, developed by early 1989 into the first ray of sunshine when the Conference of Cultural Ministers agreed on a thorough revision of higher education planning for the 1990's.

How successfully the higher education sector will be able to compete with other public sectors in the battle for increased funding is an open question. It is currently too early to tell whether or not higher education will be able to succeed, once again, in initiating a new era of staff and space expansion. In any case, one can sense a clear shift in the political mood of the country, in as much as the education and science ministries of the *Bund* and the *Länder* agree that now, twelve years after the *Öffnungsbeschluß* set the course for an overcrowded higher education system, the time has come to act. As we look into the 1990's, four central aspects come to the fore that lend themselves to a review of past trends and future issues: i) access to higher education; ii) institutional structure; iii) the role of research, and iv) the organization of studies. The review of these four aspects elucidates the extent to which features of the historical shape of higher education have persevered in the face of three decades of transition.

Access to Higher Education: Until the early 1960's, only about five percent of an age-group entered higher education; today the figure has passed twenty percent. This increase has brought about the transition from the "elite university" to "mass higher education". With respect to the future demands of an industrial technological society, this development has met with broad acceptance driving the remaining critics of the expansion of higher education on to the defensive. A limited increase of the ratio of young people entering higher education, let us say, 25 or 30 percent of an age-group, is well possible. The newest projections tend in this direction. However, a general opening of access to higher education for everybody, as suggested in the well-known three-phase model of the American educational sociologist Martin Trow (*elite - mass - universal* higher education), is hardly to be expected in the Federal Republic during this century. The principle of coupling access to higher education to a particular standard of school education, confirmed by the "maturity" certificate, is generally not being questioned, however controversial the actual standards of "maturity" may prove to be. Neither a wide-ranging opening of access to higher education as in Sweden or the USA is being discussed, nor have proposals been made to follow the example of France in aiming to radically increase the proportion of qualified school leavers. According to recently formulated French government plans, eighty percent of an age-group should have obtained the right to pursue higher education by the year 2000.

Institutional Structure: The expansion of higher education in the Federal Republic has been accompanied by intensive discussions about its future institutional structure similar to those which took place in other countries. Integrated models oriented towards the comprehensive university, that seemed to be temporarily in the forefront, or diversified models, with multi-tiered systems of subtly graded institutions resembling the prototypical US pattern, have not asserted themselves in the Federal Republic. Instead, a relatively stable "two-type structure" has evolved. The traditional university sector, expanded during the last thirty years by the founding of new institutions, and the *Fachhochschule* sector, co-exist side by side. The two sectors differ in terms of their admissions requirements; the duration and emphasis of their programmes; as well as in the qualifications, teaching loads, and research opportunities of their staff members. The sectors are rather clearly delineated and graded with regard to institutional prestige. This delineation entails latent tensions that do not rule out that the *Fachhochschulen* will be further upgraded and will gradually draw nearer to the universities. Thus, how long the relatively clear two-type structure will endure in the higher education system of the Federal Republic is an open question for the future.

Equally open to speculation is whether or not a stronger vertical diversification might assert itself within the two sectors of higher education, especially *within* the university sector. Such a development would go against the tradition of the generally equal standing of all universities. The intensive debate on ranking-lists that has recently been taking place seems to have led to an understanding that this "imported" concept deviates essentially from the German university tradition. To be sure, the challenges of transparency and competition, intimately linked to the ranking debate, will increasingly be directed towards universities in line with the demand for accountability. Also, the already existing division of labour with regard to specialized research and study programmes is likely to continue. This practice may well enhance informal prestige hierarchies at the departmental level. In summary, however, it does not seem very probable, given the results of the debate on ranking, that a vertical hierarchization beyond the more-or-less horizontal division of labour will assert itself within the two large sectors of higher education.

The Role of Research: The central role of research is constitutive of the German university tradition. The reputations of professors and of faculties are primarily the result of their research achievements. The status difference between universities and the *Fachhochschulen* is justified in no small part by the far more narrowly defined research opportunities in the *Fachhochschule* sector. During the long debates over structural changes and the future development of higher education, the central role of research in the university has never been questioned. There have been and there continue to be controversies about the appropriate relationship of research, teaching, and studies; however, the basing of research primarily in centers outside the university, as is characteristic of the French tradition and of that of many Eastern European countries, has never been seriously proposed in the Federal Republic and is inconceivable for the near future. The Science Council emphasized in its recommendations for the 1990's that higher education policy must essentially also be research policy. In the view of the Council, any tendencies pointing to an "emigration" of research from higher education that may have been registered during the overcrowded years must be decisively counteracted. This widely shared demand is based on the general assessment that the role of science and technology will increase in the future and that no other research institution can match the university in terms of topical breadth and interdisciplinary creativity. Maintaining a high standard of research at universities is also essential for training future generations of scholars for their roles in non-university research institutes.

Of course, higher education can no longer afford to retire to the ivory tower. Demands for co-operation and the transfer of knowledge between higher education and the economic and industrial sector are being heard more and more frequently. However, higher education and science, on the one hand, and business and industry, on the other, tend to live by their own respective laws. This dichotomy may well lead to friction and irritations as the two sides come into closer contact.

Study Organization: Since the early 1960's, one sentence has been repeated over and over again as though it were an incantation: Fifteen, twenty, or thirty percent of an age-group cannot study in universities in the same manner in which five percent could. In particular, the question has been raised as to whether or not a university education can maintain its dual function, professional training and introduction to research, in view of such large numbers of students. Also, questions have been raised about the traditional academic freedom that permitted students to complete and to supplement requirements at an individual pace. The suggestion has therefore been repeatedly made that study programmes be organized by stages or cycles, modelled on the Anglo-Saxon pattern, and in particular, that a clear distinction be made between professional training (for the majority of students) and research-oriented training (for a minority).

Such models have not asserted themselves as of yet; neither have the long-term discussions of proposals and measures for effectively shortening or limiting the duration of studies brought about any results. On the contrary, the periods of study have grown longer, and it is rather uncertain whether the new initiatives, supported by the Science Council and the Conference of Ministers of Culture, will be any more successful than the previous initiatives were. For whereas the politicians unanimously consider that the long periods of study are a problem, university opinion as expressed by both staff and students is mixed, many interests and conditions being intertwined with respect to the long periods of study. Among these is the new pattern of part-time studies that has developed informally without being officially established in the system of studies.

A felicitous formula in the Higher Education Framework Act exhorts the higher education institutions to continuous study reform. Following the overburdened decade of the 1980's, there will be, according to all forecasts, at least no more dramatic growth in student numbers during the 1990's. Therefore, the review of the contents of studies, the structure of courses, and the integration of new study patterns might be accorded new attention in the years to come.

A large number of authorities, committees, and persons, both inside and outside higher education, are participating today in policy-making, planning, financing, and administering higher education. Decision and control structures with regard to the higher education sector have undergone major changes during the past several years. The *Bund* has assumed a new role in the areas of legislation and finance. The *Länder*, which transferred a part of their cultural-federal authority to the higher level of federal authority, have strengthened their influence over the institutions of higher education. The traditional scope of autonomy and self-administration of the institutions has been narrowed, even if the basis for participation within the institutions has been broadened.

During this transitional process, lines of conflict have appeared and have been marked out between the *Bund* and the *Länder*; between the State and higher education; and among the different groups within the institutions themselves. During the late 1980's, the processes of negotiation have taken on a certain routine. The tasks for the 1990's, which include the consolidation of the overburdened institutions, the strengthening of research within higher education, the advancement of the organization and the contents of studies, and the inclusion of the European perspectives of the future, will put the newly developed structures within higher education to the test.

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11. Key Institutions of the Higher Education Sector

Federal Ministries

Bundesministerium für Bildung und Wissenschaft (BMBW) (Federal Ministry of Education and Science)
D-5300 Bonn 2, Heinemannstraße 2

Bundesministerium für Forschung und Technologie (BMFT) (Federal Ministry of Research and Technology)
D-5300 Bonn 2, Heinemannstraße 2

Ministries of the Länder

Baden-Württemberg: Ministerium für Wissenschaft und Kunst (Ministry of Science and Art)
D-7000 Stuttgart 1, Königstraße 46

Bayern: Staatsministerium für Wissenschaft und Kunst (State Ministry of Science and Art)
D-8000 München 2, Salvatorplatz 2

Berlin: Senatsverwaltung für Wissenschaft und Forschung (Senate Administration for Science and Research)
D-1000 Berlin 19, Bredtschneiderstraße 5-8

Bremen: Senatsverwaltung für Bildung, Wissenschaft und Kunst (Senate Administration for Education, Science, and Art)
D-2800 Bremen 1, Rembertiring 8-12

Hamburg: Behörde für Wissenschaft und Forschung (Senate Administration for Science and Research)
D-2000 Hamburg 76, Hamburger Straße 37

Hessen: Ministerium für Wissenschaft und Kunst (Ministry of Science and Art)
D-6200 Wiesbaden, Rheinstr. 23-25

Niedersachsen: Ministerium für Wissenschaft und Kunst (Ministry of Science and Art)
D-3000 Hannover 1, Prinzenstraße 14

Nordrhein-Westfalen: Ministerium für Wissenschaft und Forschung (Ministry of Science and Research)
D-4000 Düsseldorf 1, Völklinger Straße 49

Rheinland-Pfalz: Kultusministerium
(Education Ministry)
D-6500 Mainz 1, Mittlere Bleiche 61

Saarland: Ministerium für Kultus, Bildung und Wissenschaft (Ministry of Culture, Education, and Science)
D-6600 Saarbrücken 1, Hohenzollernstr. 60

Schleswig-Holstein: Ministerium für Bildung, Wissenschaft, Jugend und Kultur
(Ministry of Education, Science, Youth, and Culture)
D-2300 Kiel 1, Düsternbrooker Weg 64-68

Other Institutions

Alexander von Humboldt-Stiftung (AvH)
D-5300 Bonn 2, Jean-Paul-Straße 10-12

Alexander von Humboldt Foundation: An organization financed by the Federal Government. It awards scholarships to young foreign academics holding doctorates which enable them to pursue research projects in the Federal Republic of Germany. Similar awards are made to young German academics holding doctorates to enable them to carry out research in other countries.

Bund-Länder-Kommission für Bildungsplanung und Forschungsförderung (BLK)
D-5300 Bonn 1, Friedrich-Ebert-Allee 39

Bund-Länder Commission for Educational Planning and Research Promotion: Joint governmental institution dealing with important current questions concerning education policy and co-ordinating planning and budgetary considerations in the field of research.

Deutscher Akademischer Austauschdienst (DAAD)
D-5300 Bonn 2, Kennedyallee 50

German Academic Exchange Service: A higher education organization for the promotion of relations with universities and colleges in other countries. It is funded almost exclusively from federal sources. It provides information on the opportunities for study in the Federal Republic of Germany and abroad, and, within the terms of special programmes, awards scholarships to foreign and German students and young academics.

Deutsche Forschungsgemeinschaft (DFG)
D-5300 Bonn 2, Kennedyallee 40

The *Deutsche Forschungsgemeinschaft* is an autonomous organization set up by higher education institutions and research facilities. It provides financial assistance for higher education research projects. Its funds stem mainly from Federal Government and *Länder* sources.

Deutsches Studentenwerk (DSW)
D-5300 Bonn 1, Weberstraße 55

German Student Welfare Service: The national umbrella organization of the local student welfare offices; looks after the general socio-political interests of the student population.

Hochschul-Informations-System GmbH (HIS)
D-3000 Hannover 1, Goseriede 9

Higher Education Information Service: This organization is financed by the Federal Government and the *Länder*. It elaborates rationalization processes for higher educational administration and conducts surveys and prepares experts' reports which serve as a basis for decisions on higher education policy.

Kultusministerkonferenz (KMK)
Ständige Konferenz der Kultusminister der Länder in der Bundesrepublik Deutschland
D-5300 Bonn 1, Nassestraße 8

Conference of Ministers of Culture: Standing conference of all *Länder* ministers responsible for education at all levels. The KMK was set up by the federal states (*Länder*) as a means of providing consultations and co-ordination in education policy. A special committee exists for higher education policy and administration.

Planungsausschuß für den Hochschulbau (PLA)
Geschäftsstelle: Bundesministerium für Bildung und Wissenschaft
D-5300 Bonn 2, Heinemannstr. 2

Planning Committee for Higher Education Construction: A joint committee of the *Bund* and the *Länder* at governmental level which decides on targets and projects in higher education construction as well as on financial investments.

Westdeutsche Rektorenkonferenz (WRK)
D-5300 Bonn 2, Ahrstraße 39

West German Rectors Conference: An organization in which higher education institutions of all types work together on a permanent basis to fulfill their commitments and to look after common interests.

Wissenschaftsrat (WR)
D-5000 Köln 51, Marienburger Straße 8

Science Council: An advisory body set up jointly by the Federal Government (*Bund*) and the federal states (*Länder*) to submit recommendations on the structural development of higher education institutions, investments in higher education, and research matters. The members representing the academic field have the same number of votes as the members representing the *Bund* and *Länder* governments.

Zentralstelle für die Vergabe von Studienplätzen (ZVS)
D-4600 Dortmund 1, Sonnenstr. 171

Central Agency for Student Placement: An agency set up by the *Länder*, responsible for administering admission and placement of students for courses of study with countrywide admission restrictions.

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